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TEAMING UP

Two very different companies create the project management system of their dreams. Page 50

RIPPING INTO REDMOND

Paul Strassmann tears apart Microsoft's assertion that IT is responsible for 25% of the nation's economic growth. Page 48

ERP MAKEOVER

IT managers say ERP systems can help them wipe out corporate chaos. Page 74

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BANKS SPARE IT AS LAYOFFS PILE UP

Y2K, backlogged projects protect tech staff

BY THOMAS HOFFMAN AND JULIA KING

The ax is falling across the banking industry, but it's not cutting through the ranks of IT professionals.

That's because there's simply too much work to do with year 2000 testing at full-throttle and merger mania driving systems consolidation.

Plus, with the bulk of year 2000 work behind them, banks finally are moving ahead with money-making information technology projects that have been delayed by the millennium focus. High on that list are customer relationship management systems, data warehouses and other systems that enable banks to create customized accounts for individual customers.

Since January, a number of megabanks have announced steep job cuts as they brace for slower revenue growth, attack spiraling expenses and mop up after years nf merger mania. Just last week, First Union Corp., the fourth-largest bank in the country, announced it would lay off 10% nf its workforce, roughly 7,200 workers. A month earlier BankAmerica Corp., the nation's second-largest bank, announced it would lay off 18,000 workers, or 10% of its workforce. Both

Banking, page 16

JUST THE FACTS

According to American Banker Inc., more than **370 banks** *were involved in mergers and acquisitions last year.* **Job loss** *projections from five of the top 10 banks totaled more than 200,000.*

NOW FOR THE *OTHER* Y2K PROBLEM

Leap year could bite shortsighted, sloppy IT

BY MITCH BETTS AND THOMAS HOFFMAN

Starting this time next year you'll find out .whether your computer systems can handle the *other* year 2000 problem.

Next year is a leap year, a calendar phenomenon that historically has driven computer systems nuts if they fail to account for the extra day, Feb. 29. The last leap year, 1996, saw numerous snafus, including a New Zealand aluminum smelter that literally had a meltdown when the computers shut off; they weren't programmed to handle a 366th day.

Computer glitches crop up every leap year — even though the problem is well-known — because date arithmetic errors are repeated in new programs, said computer scientist Peter G. Neumann, author of *Computer Related Risks*.

Leap year, page 97

GREETING CARD RIVALS TAP TECH TO STAY ON TOP

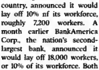
As upstarts close in, IT speeds product delivery

BY MATT HAMBLEN

One started in 1910, the other opened in 1906. Together, they own close to 75% of the $3.5 billion wholesale market for greeting cards in the U.S. But competition from small upstarts has pushed Hallmark Cards Inc. and American Greetings Corp. tn invest in information technology to bring sentiments-in-envelopes tn retailers more quickly.

Backed by a $50 million marketing campaign, Hallmark today unveils a line of 99-cent cards called Warm Wishes that will compete against "deep dis-

Greeting card, page 97



HALLMARK's James Miller says IT helped ship a new card line in a fraction of the usual 20 months

PETER BENGTSSON of Boss Casinos says running a Web casino is like running a bank

POINT, CLICK, JACKPOT!

INTERNET CASINOS face some special challenges in the world of electronic commerce, such as doling out $50,000 jackpots and handling scores of simultaneous users who hammer the site at 60 clicks per minute. Not to mention the fact that they have to stay offshore to avoid U.S. prosecution. So travel with senior editor Kim S. Nash to beautiful Antigua and meet the people behind the screens of online roulette and virtual blackjack. Turns out they're MBAs, not beach bums sipping umbrella drinks.

Report begins on page 24

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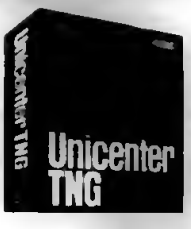

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YEAR 2000

Canadian Imperial Bank's John Burns (pictured) is figuring out if – or how many – panicked customers plan to raid their accounts before year 2000 (Page 40). And, how you can prevent your fixed year 2000 code from being reinfected (Page 40)

GET SMART!

QuickStudy explains how those brilliant little smart phones work. Page 73

We also look at "smart materials" – sensor/transceiver/processors in a package the size of this o. Page 70

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81 **NT SKILLS** are in high demand, command hefty salaries.

I ASKED MY GRANDKIDS, 'DID YOU EVER LOOK UP AT THE CLOUDS AND SEE THEM FORM TRAINS AND SHIPS?' THEY LOOKED AT ME LIKE I WAS CRAZY.

RUTH MICHALECKI, CHAIRWOMAN OF THE INTERNATIONAL COMMUNICATIONS ASSOCIATION, CHARMING THAT TECHNOLOGY PLAYS TOO BIG A PART IN MANY PEOPLE'S LIVES. SEE PAGE 20

AT DEADLINE

IBM Ends Chip Pact With Hitachi

IBM and Hitachi Data Systems have quietly discontinued an agreement dating back to 1994 under which IBM sold CMOS chips for Hitachi's midrange Pilot mainframes.

Starting next January, Hitachi will develop its own CMOS mainframe chips. The move won't affect software compatibility or short-term hardware upgrades, Hitachi said.

IBM said extra costs associated with the pact played a role in ending the relationship.

Compaq: Fewer DEC Layoffs Ahead

Compaq Computer Corp. won't have to lay off as many Digital Equipment Corp. employees as originally planned because more than expected – 2,300 – already have left to find other jobs.

Compaq's annual report to the Securities and Exchange Commission says there will need to be only 12,400 "involuntary separations" by the end of July.

Sales of AMD-Based PCs Surpass Intel

For the first time, desktop PCs running on processors by Advanced Micro Devices Inc. in Sunnyvale, Calif., outsold desktops with processors by Intel Corp.

Nearly 44% of all PCs sold in the U.S. in January were equipped with AMD-K6 processors, while PCs with Intel processors accounted for about 40%, according to the January "Retail Hardware Report" by PC Data in Reston, Va.

Reader's Digest Bets $100M on Web

Reader's Digest Association Inc. will pump $100 million into its online presence as part of a company growth strategy, chairman and CEO Thomas O. Ryder announced.

Ryder said the Pleasantville, N.Y., company will use that investment to launch new Web sites with the *Reader's Digest* brand and enhance its 20 current Web sites.

BALLMER TARGETS USER SATISFACTION

Microsoft president creates new unit to reverse bad rep for service, quality

BY SHARON GAUDIN AND KIM S. NASH

AMID REPORTS of Steve Ballmer's crackdown at Microsoft Corp. comes word that the company's recently appointed president is wielding the customer service call like a hammer.

Ballmer, trying to push his edict for better corporate customer service down the ranks, quietly created a Customer Satisfaction organization in January or late December. The new unit reportedly is charged with handling customer service problems and will have the ability to call upon any Microsoft division to solve them.

The group is headed by Jean-Philippe Courtois, the former general manager of Microsoft France. Courtois was plucked from that job last summer to become vice president of customer marketing.

Courtois' group "owns [customer satisfaction] and can drive it through the other organizations," said Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif. He added that Ballmer briefed him on the new group two weeks ago. "First, he woke everyone up and told them what they had to do, and now he's putting an enforcement arm on it," he said.

Personal Mission

Enderle said the new group sprouted out of Ballmer's tireless — and reportedly heavy-handed — efforts to change Microsoft's long-held reputation as a company that cares much more about shipping out boxes of software than taking care of its customers. "It's a very personal mission for Ballmer to get quality where it belongs," Enderle said.

Microsoft's call center has been a point of contention for many customers. "As for calling their help line ... I can sit on hold and pay to listen to their 'hold music' by the minute, or I can just turn on my radio and get about as much [done]," said Kalman Shor, director of information systems at Michael Anthony Jewelers Inc., a Mount Vernon, N.Y., manufacturer that has annual sales of about $100 million.

Microsoft's new group comes after its top brass committed themselves to improving customer service. That meant dealing with understaffed call centers that leave users on hold while the meter rings up a bill, support personnel who know less than the engineers calling in for help and service packs that unleash more bugs than they fix. Last summer, Ballmer and his staff cited all of those as problems they would solve.

In response, Microsoft upped staffing in its call center prior to the release of SQL 7.0 and has said it will boost staffing again before the release of Windows 2000, expected later this year.

As for its buggy service packs, Windows NT 4.0 Service Pack 4.0 received its share of complaints, and patches for it have been issued.

Microsoft also promised to pump $200 million into its service and support efforts, created a new business division by merging the enterprise and service units and added personnel to take calls and answer questions. A beefed-up TechNet program launched a series of tutorials around the world, an educational Web site and an expanded version of its tutorial CD-ROM series.

And they're making some headway. Corporate users interviewed won't give Microsoft a five-star rating for customer service, but most said they're being treated better.

"There is a difference. We've actually talked to a human being at the call center," said Pat Ryan, a software engineer at Hobart Corp., a Troy, Ohio-based manufacturer.

Bill Seltzer, CIO at Office Depot Inc. in Delray Beach, Fla., said he decided to stick with Microsoft products because of the attention he gets from his local Microsoft technical team.

"I'm very pleased with their support. They have helped us so much with the Web site," he said. Seltzer added that the site is expected to be profitable this year.

Intel Promises Faster, Cheaper, Simpler PCs

New architectures expected to push business users to adopt low-cost models

BY GALEN GRUMAN AND STEWART DECK
PALM SPRINGS, CALIF.

The pieces came together last week on the shape of the new PC: faster speeds, of course, and consolidated interfaces and bus standards. The goal? Widespread adoption of inexpensive PCs by companies.

At the Intel Corp. developer forum here, the company demonstrated a prototype Pentium III processor running at 1,002 MHz — just shy of 1 GHz — and a Pentium III-based laptop running at 600 MHz. Also on view were new motherboard designs that, by dumping old technologies like the ISA bus, should reduce the size, cost and complexity of PCs.

In the consumer market, PCs that cost $1,000 or less have already become the norm. But businesses have resisted such cheap PCs [CW, Feb. 8]. Intel hopes its latest blueprint will change that in the next two years, said Paul Otellini, Intel's executive vice president for architecture business. Better technology delivered at lower prices than today's midlevel business systems will end resistance to cheap PCs, he said.

The new capabilities shouldn't overwhelm users or information technology departments, said Rob Enderle, an analyst at Giga Information Group Inc. in Santa Clara, Calif. "Most of the features that have been added address requests and feedback Intel has received from large accounts and [PC makers]. From the user perspective, most of it will be invisible," he said.

Intel officials stressed that in the future, they will change the basic technology less often. For example, the Pentium III, formally announced last week, will use the same memory and chip set as the Pentium II, letting companies add Pentium III systems without adding new architectures to support.

Users have complained about the administrative fallout from having an ever-faster cycle of systems refreshes. And the many types of peripheral and expansion buses would be consolidated to just Universal Serial Bus (USB), IEEE 1394 (popularly known as FireWire), ATA/IDE, Next Generation I/O (NGIO, a replacement for Peripheral Component Interconnect) and Advanced Graphics Port (AGP). But new chip sets and motherboard components are due for late 2000 through 2003 to support the following faster components:

- A 133-MHz memory bus (up from 100 MHz) and a new kind of memory called DirectRDRAM that runs at that speed.
- The twice-as-fast AGP 4X graphics bus.
- The twice-as-fast ATA/66 drive bus.
- A 10- to 20-times-as-fast version of the USB peripheral bus.

With these technologies, systems will better handle applications such as three-dimensional graphics, multimedia and videoconferencing, said Sherry Garber at Semico Research Co. in Phoenix.

MOREONLINE

For links to stories on related subjects such as Merced/IA-64, WTX, NGIO, PCI-X, USB 2.0, AGP 4X, AGP Pro, DirectRDRAM, ATA/66, 500-MHz and faster Pentiums, SIMD and 400-MHz and faster mobile Pentiums and Celerons, visit our Web site www.computerworld.com/more

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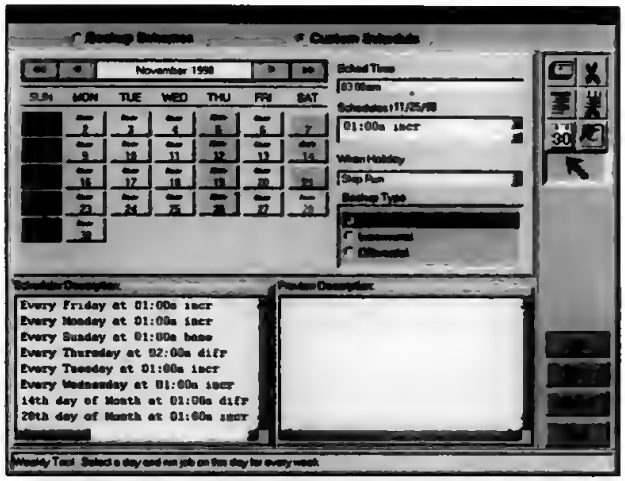

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Microsoft Blunders May Encourage Settlement With DOJ

Defense racks up more embarrassment on eve of trial recess

BY PATRICK THIBODEAU
WASHINGTON

Users who believe that Microsoft Corp.'s antitrust case won't affect their business for years to come may have to think again.

Microsoft's courtroom mistakes and blunders make it more likely that the case will end with a negotiated settlement, legal experts said.

The Redmond, Wash.-based software maker has consistently denied it will seek a settlement that forces it to compromise on the integration of its Web browser into its Windows operating system.

Reasons to Deal

But observers said there are many reasons why the company may nonetheless consider an out-of-court deal.

Among them would be a desire to put an end to the string of embarrassing video gaffes and contradictory testimony from key witnesses — a problem that continued last week.

"If I were Microsoft, I would think hard about [a deal] now," said Harvey Saferstein, an antitrust lawyer at Fried, Frank, Harris & Jacobson in Los Angeles.

Last week, company executive Dan Rosen — who attended a key meeting with rival Netscape Communications Corp. — offered contradictory testimony and was at one point accused by government attorneys of making up evidence. In the end, Rosen conceded that he had to "stand corrected."

Rosen's performance was so bad that even Judge Thomas Penfield Jackson made light of it. When Microsoft attorney Michael Lacovara, who is in his 30s, began his effort to rehabilitate his witness, a smiling Jackson said, "It's always inspiring to watch young people embark on heroic endeavors." The courtroom broke out in laughter.

The trial, which began in October, is taking a six-week recess to allow Jackson and government attorney David Boies to handle previously scheduled cases.

When the trial resumes in mid-April, each side will offer rebuttal witnesses and an economist. Microsoft will try to use the new witnesses to repair its case.

Most antitrust cases end in settlements, and the failure of Microsoft and the government to reach an earlier deal doesn't preclude an agreement now, legal experts said.

Earlier Break-up

For instance, AT&T Corp. went through some tough litigation before entering into an agreement that led to its 1984 divestiture, said John Flynn, a professor at the University of Utah School of Law and former special counsel to the Senate Antitrust Committee.

Without a settlement, it may be two or more years before the case is resolved on appeal. If a settlement is reached, the remedy issue will come to the forefront. What are the possible remedies?

Options include everything from the breakup of Microsoft to prohibitions on certain practices such as exclusive contracts [CW, Feb. 15].

Tom McCafferty, the network manager at the Reynolds Metals Co. facility in Muscle Shoals, Ala., is among the users struggling with the remedy issue.

He said he believes the goal of the government's antitrust case should be clear. "It should create an atmosphere that doesn't stifle competition," he said.

JUST THE FACTS

The End Is Near

Schedule for the remainder of the Microsoft antitrust trial:

- Trial in recess until April 12
- When it resumes, both sides will call rebuttal witnesses
- Closing arguments begin after rebuttal
- Judge's verdict expected sometime in summer

MAKING THE GRADE ON Y2K?

U.S. REPS. Constance Morella (R-Md.), left, and Stephen Horn (R-Calif.), last week gave the federal government a grade of "C+" on their latest report card on year 2000 readiness. Although it improved from a "D" in November, the report indicated three agencies still deserve an "F": the departments of State and Transportation and the Agency for International Development. Defense improved from a "D-" to a "C-" and 11 agencies received "A" or "A-" grades

USER ISSUES FUEL FED SUITS, REVIEWS

Although users don't often speak out, some companies will lobby customer support

BY DAVID ORENSTEIN
MENLO PARK, CALIF.

User concerns are at the crux of government antitrust and merger investigations even if users often don't testify or speak out, experts at a seminar for technology vendors' lawyers said last week.

"If customers complain about a [merger], chances are [it] won't happen," said John DeQ. Briggs, an attorney at Washington-based Howrey & Simon and a former chairman of the American Bar Association's antitrust section.

One of the first things the Department of Justice (DOJ) or the Federal Trade Commission does when investigating a merger is to interview large customers, Briggs said.

If a merger is controversial enough, companies will try to lobby customers.

Sometimes, customers begin a merger review of their own or hire attorneys to assert their interests.

For example, as both a customer and competitor of MCI WorldCom Inc., GTE Corp. last year pressed to force the merging companies to divest their control of the Internet backbone, Briggs said.

In the Microsoft Corp. antitrust case, the government is relying on PC makers to represent information technology customers and retail consumers, said Marc C. Schechter, a Howrey & Simon attorney, who as deputy director of operations at the DOJ's antitrust division negotiated the government's first case against Microsoft in 1994.

ATTORNEY JOHN DEQ. BRIGGS: "If customers complain about a [merger], chances are [it] won't happen"

The reasoning behind that thinking is that PC makers have made the choice on consumers' behalf to include the Windows operating system as part of the purchase price and package.

Taking Care of Business

But often, actual users don't feel enough pain from a proposed merger or antitrust activities to divert attention from their businesses.

Many users have told *Computerworld* that they're interested in the Microsoft case but aren't adamant one way or the other about its outcome.

Robert V. Goodman, CIO at the $2 billion auto-parts retailer Pep Boys — Manny, Joe & Jack, in Philadelphia, said the local chapter of the Society for Information Management does a little advocacy work but hasn't established a major voice to influence the outcome of the Microsoft antitrust case.

Pep Boys took a minor hit several years ago when Computer Associates International Inc. started buying other vendors and raising prices.

But in general, Goodman said, the technology marketplace is too dynamic for any one vendor to hold too much power.

"Microsoft is going to have a very difficult time staying on the peak of the mountain," he said. Product obsolescence is more of a problem than vendor consolidation, he said.

IF YOUR BUSINESS' NEEDS EXCEED THAT OF YOUR INTERNET SERVICE, THERE ARE ALWAYS OTHER WAYS OF COMMUNICATING.

UUNET

BRIEFS

Local Telcos Can't Charge for Net Access

The Federal Communications Commission ruled that dial-up Internet traffic appears to be interstate, thus preserving the rule that exempts the Internet and other information services from interstate access charges.

The ruling means that local phone companies can't assess access charges on Internet service providers.

H-1B Visas Going Fast

The U.S. Immigration and Naturalization Service said that more than 70,000 of the 115,000 H-1B visas available for fiscal 1999 have been taken.

Another 115,000 H-1B visas – which let highly skilled foreign professionals work in the U.S. for six years – will become available in October, when the next fiscal year begins.

IT Issues Lead to Bank CEO's Exit

Bank of Montreal CEO Matthew W. Barrett resigned, two months after Canada's finance ministry rejected the Toronto-based bank's plans to merge with Montreal-based Royal Bank of Canada.

Analysts said the merger was thwarted in part over concerns that the banks wouldn't be able to consolidate systems or meet their year 2000 project deadlines. Barrett, 54, will remain chairman until November.

Proposal Eyes Richer Web Data Exchange

The organization that oversees Web technical standards has issued a recommendation on how to handle meta data – which describes elements such as content categories and formatting – on the Web.

The World Wide Web Consortium's Resource Description Framework lets applications automatically exchange more data across the Web.

Details are available at www.w3.org/rdf.

NETWORK DRIVES SUBARU PARTS PLAN

IT overhaul of U.S. parts warehouses forces frame-relay bandwidth expansion

BY BOB WALLACE

IMAGINE AN automaker completely closing its 50,000- to 160,000-sq.-ft. parts warehouses for two days so workers could perform a wall-by-wall manual inventory of all items in stock.

That was Subaru's annual practice at its five U.S. facilities — but not anymore. Last week, the company said that as part of a multimillion-dollar information technology project, it's installing warehouse management systems and an inventory forecasting application that are driving a massive nationwide upgrade of its data network.

SUBARU'S ROBERT DOUGHERTY says the new apps will help speed repairs

The $3 billion automaker's shift from custom mainframe-based applications to client/server enterprise resource planning tools has forced the company to boost the bandwidth on its frame-relay network by 300% in some cases and to buy Cisco Systems Inc. routers for each of its 12 sites.

"Staying with the bandwidth we had would've slowed these bandwidth-intensive applications to a crawl," said Robert Dougherty, vice-president of IT and CIO at Subaru of America Inc. in Pennsauken, N.J.

Subaru is outsourcing its data network along with its data center operations and help desk to Unisys Corp. in Blue Bell, Pa. The last two will be moved to the vendor's Eagan, Minn., center. Unisys has selected AT&T Corp. for Subaru's network. AT&T will provide T1 pipes to sites that had 512K bit/sec. pipes and 256K pipes to sites that had 128K pipes.

The new applications "will help make certain that dealers have the right parts in stock to service vehicles the same day, which represents a big customer service benefit," Dougherty said. The new process continually updates inventory and is less prone to errors because warehouse workers won't have to key each part number into the system.

The IT project, which doesn't include the items outsourced to Unisys, is Subaru's largest ever in the U.S. and is expected to be completed in June.

Dougherty said the project will save money, but he didn't estimate how much. Avoiding warehouse shutdowns requires sophisticated systems and more bandwidth — items that automakers and their largest suppliers are buying quickly, according to Bill McSpadden, president of Plant-Wide Research Group in Billerica, Mass.

When all five facilities begin to use the warehouse management systems, warehouse workers will scan in boxes of parts using handheld bar-code readers.

Data that had been on packing slips will be sent to a wireless base station in the warehouse and over the frame-relay network to a Unix box running Sun Microsystems Inc. Solaris at the new data center, Dougherty said.

Vendors Rally Behind Linux

HP unveils strategy; IBM plan expected

BY DAVID ORENSTEIN

Judging by the vendor exhibits and announcements planned for the LinuxWorld Conference and Expo this week in San Jose, Calif., Linux has joined the other Unix versions as a bona fide commercial enterprise operating system.

"This is going to help legitimize Linux in the eyes of the enterprise," said Sandra Potter, an analyst at Aberdeen Group Inc. in Boston. "This will be the year when people will vote on whether Linux will begin to be deployed for mission-critical applications."

Eager to kick off the pro-Linux posturing, Hewlett-Packard Co. announced a company-wide initiative last week. HP will work with the open-source Linux development community to port Linux to the PA-RISC chip. HP also will provide tools for Linux as a development platform and Linux training and online support.

Intel Corp. last week said it would ensure that Linux developers have what they need to make Linux compatible with the forthcoming IA-64 (Merced) processor.

Analysts said they expect IBM to announce sweeping support and bundling agreements with several Linux vendors. IBM also could announce its Linux-related plans for the company's WebSphere application server.

Unix giants such as Compaq Computer Corp. and Sun Microsystems Inc. are major sponsors of the conference. Silicon Graphics Inc. also plans to announce a Linux strategy.

Other related announcements include the following:

- Computer Associates International Inc. plans to port products to Linux.
- Pacific HiTech Inc. in Oakland, Calif., will announce bundles of its Linux version that have enterprise server features, including Oracle Corp.'s Oracle8 database. It will demonstrate clustering technology it's developing for Linux.
- LinuxCare Inc., a version-agnostic Linux service and support start-up in San Francisco, will launch around-the-clock support and a free, Web-based troubleshooting database.
- Fremont, Calif.-based RAID vendor Mylex Corp. will support Linux in all its products.
- Linux vendor Caldera Inc. in Orem, Utah, joined with storage vendor MTI Technology Corp. in Anaheim, Calif., last week to integrate Linux with a RAID system.
- Informix Corp. in Menlo Park, Calif., will get more third-party vendors to bundle its Linux-based database.

Verity to Release Software For Managing Intranet Data

BY CAROL SLIWA

Verity Inc. in Sunnyvale, Calif., this month will release Knowledge Organizer to help companies categorize intranet content so users can effectively search for it.

The software runs on Verity's Information Server and can be particularly useful to companies setting up corporate portal sites, which give users a central place to gain access to a wide range of information.

Knowledge Organizer combines a search tool with personalized layout to let users or company departments browse subject categories they designate so they can home in on the information they want.

Tools help site creators build customized content that can be viewed by product, project or other categories. Pricing wasn't available. Knowledge Organizer competes with products such as Autonomy Inc.'s Portal-In-A-Box and PC Docs/Fulcrum's knowledge management products.

"A relatively small percentage of intranets have comprehensive search tools that let users access all the documents available," and tools like Verity's can help, said Hadley Reynolds, an analyst at The Delphi Group in Boston.

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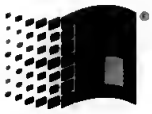

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IT Pros Promoted Despite Reduced Hours

BY BARB COLE-GOMOLSKI

Contrary to popular belief, reducing your working hours doesn't derail your career in information technology.

Desperate to keep scarce talent, IT departments are letting staffers win promotions — up to a certain level — while working 25 to 40 hours per week.

That follows a general employment trend. A recent study from Purdue University in West Lafayette, Ind., and McGill University in Montreal showed that 30 out of 87 corporate professionals studied during two years were promoted while working reduced hours.

"You can move ahead while working less than full-time, but you can only get so far [in the organization]," said Dawn Lepore, CIO at Charles Schwab & Co. in San Francisco. Lepore said several of her staff are working reduced schedules, and some have risen to just below the vice president level.

Lepore said allowing flexible work schedules will become more common in IT because it's key to retaining employees.

Part-time Works

A study of 87 corporate professionals found:

PART-TIME WORKERS were typically paid 60% to 80% of their full-time salary

THEY REDUCED their work week on average by about 18 hours

ADJUSTED SCHEDULES made about 90% of the respondents happier

ONLY 10% of the people in the survey plan to return to full-time work in three years

Source: Purdue University and McGill University

Sue Hanley, senior principal at the IT consultancy American Management Systems Inc. in Fairfax, Va., said her ability to work a reduced schedule during the past 11 years "and not worry about whether my career would fall apart [is] the reason I work here."

That may be because "IT organizations don't really need face time, they need output," said Janet Smith, president of Ivy Planning Group Inc., a Potomac, Md., consultancy that specializes in diversity training. "Companies are more interested in whether projects are getting done than how much time you spend at the office," she said.

Of course, not every IT professional can cut back the hours and rise through the ranks. In the Purdue/McGill study, reduced hours usually worked for employees who had a supportive boss and who were highly skilled, organized and efficient. "It's difficult to manage a part-time schedule," said Lepore, who worked a reduced schedule for part of last year after the birth of her child. "You have to work harder at maintaining your priorities."

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*Like all **Energizer PME for R/3** components, **OptiWatch** and **OptiGrowth** use standard ABAP programming features and R/3 data collection routines. They reside within R/3 and run as an integrated application, which means installation is simple, the transactions are easy and familiar to use, and overhead is less than 1%. They work on all platforms that support R/3 and are designed for all R/3 users...from the smallest company to the largest, worldwide enterprise.*

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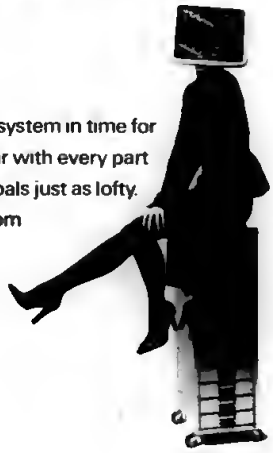

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PENTIUM III HACKED, BUT STILL SHIPPING

New hack reads serial numbers: IBM disables ID, Intel to ship enabled chip

BY ANN HARRISON

THE CONTROVERSY surrounding Intel Corp.'s new Pentium III chips flared up again last week, after a German computer magazine claimed it has developed a software hack that accesses serial numbers burned into the chips and Intel backed off an earlier compromise, citing concern over possible misuse of the ID.

IBM said it will disable the feature in the Pentium III computers it sells.

Andreas Stiller, a senior hardware editor at *Magazin Fur Computer Technik* in Hannover, claims the identifying processor serial numbers can be read without the user's knowledge.

Separately, Intel reversed its earlier compromise with privacy advocates and said the Pentium III will ship with serial numbers enabled — not disabled. The company is now recommending that PC makers install a special on/off switch in the system BIOS, which is a level of control inaccessible to most users.

Christopher Caine, vice president for government affairs at IBM, wrote in a letter to the Washington-based Center for Democracy and Technology, that IBM will deactivate the feature at the BIOS level.

Intel says it will also offer a free utility to system makers that lets end users turn the identification feature on or off with a Windows utility.

Teresa Light, vice president of software delivery and implementation at Cleveland-based Bradley Co., a subsidiary of Xerox Corp., said access to the serial number doesn't pose a big information technology security threat. "In the old days, we could just pull a board out of a computer and get the serial number out of that, and that was no big deal," Light noted. "I don't see what they can do. So what? They have the serial number. Congrats for being a great hacker."

But Stiller said he has demonstrated a software hack — which can be accomplished over the Internet — that resets the BIOS switch and the Windows utility. The hack effectively accesses the serial number, storing the data and possibly attaching it to a cookie, which is a piece of software code that collects information about an Internet user's browsing habits.

The German editor said the hack was developed from published plans of the chip and system architecture and that users were unlikely to notice that the on/off switch had been reset.

"Since Intel has not done any security checks inside the software, it's easy to patch," Stiller said.

Intel spokesman Tom Waldrop acknowledged that the software in a Windows installation utility or the BIOS switch could be compromised without the user's knowledge.

But Waldrop questioned why anyone would want this data and noted that the serial numbers are intended to assist IT managers with asset tracking, information management and security.

Privacy activists have charged that the identification number would make it impossible for users to remain anonymous on the Internet and have asked for a recall of the chip.

ERP Vendors Get the Message: Easy Does It

New products ease deployment, interface

BY CRAIG STEDMAN

User demands for software that's less forbidding to work with are increasingly sinking in with ERP vendors.

As a result, increased user friendliness and easier deployment are the twin engines driving new technology that's on the way from SAP AG and some of its enterprise resource planning (ERP) rivals.

For example, in two weeks, SAP plans to show off a promised redesign of its R/3 applications that's supposed to reduce the number of screens users have to click through to enter orders and run other business transactions. The only catch is that the new-look R/3 isn't expected to be ready for release until later this year.

Oracle Corp. this week is due to announce business-process modeling tools aimed at streamlining installations of its ERP suite — a step already taken last year by the likes of SAP, Baan Co. and J. D. Edwards & Co.

And Lawson Software Inc. last week released a set of programming interfaces and business objects that lets buyers of its applications create their own user interfaces in Visual Basic and other popular languages [CW, Feb. 22].

Do the Math

Those kinds of improvements are crucial for users like Innotrac Corp. in Atlanta, which does marketing and order-management work for regional telephone companies.

Innotrac uses Lawson's software for jobs such as order entry and purchasing. But workers in its call center "are continually clicking and drilling around [the applications] trying to find different combinations of information," said Ken Cartmell, a senior information technology project manager at Innotrac.

The business math is simple, he said: The longer it takes to get the right data, the more people are needed to handle calls for Innotrac's customers. So now the company is developing a user interface in Visual Basic that will point out where to go from a single screen.

That also should make training users less of a chore, Cartmell said. And, he added, Visual Basic is much easier to work with than Lawson's proprietary development language.

Lyle Smith, director of global human resources information systems at PPG Industries Inc. in Pittsburgh, said he's expecting similar benefits from a release of Oracle's human resources software that's due out this summer with support for creating single-screen data-entry forms.

JUST THE FACTS

The problem: ERP systems have thousands of data tables that need to be configured by each company. Often, end users then have to drill through numerous screens to do their jobs.

What that means: Long and complicated installation procedures, followed by heavy-duty investments in training users and potential reductions in the productivity of some workers.

What's being done. Vendors are offering rapid-deployment guidelines and business modeling tools. And streamlined user interfaces are being developed to ease navigation through the applications.

Oracle Program Offers Free 8i Upgrade to Combat Y2K

BY STEWART DECK

Oracle Corp. last week announced an upgrade program to help users of old, unsupported and obsolete versions of its database software become year 2000-compliant. But it's a limited-time offer that expires after two months.

The Oracle Upgrade2000 program covers Oracle database software tools from Oracle7.3.3 and earlier. When users of these older versions of the database call in, the company will mail them individually tailored versions of the new Oracle8i database — all at no charge.

Greg Kuhn, a vice president of Oracle's Y2K Task Force, said the 3,000 to 4,000 users of the older software chiefly are small-to-midsize companies with annual revenue of less than $500 million, as well as government agencies.

"We're doing this for year 2000," Kuhn said. "We want to help our users get on to currently supported products and let them know that these [older] products run on top of non-Y2K compliant operating systems. If there's ever an obscure Y2K bug in our [unsupported] products, we're not going to patch them."

When users call in, Oracle will toss in a sales pitch for product support and migration and consulting services.

"This program sounds pretty savvy to me," said Rich Niemiec, executive vice president of the International Oracle Users Group. He said most users haven't upgraded for two reasons: budgetary constraints or labor shortages. The offer should appeal to both of those types, he said.

Oracle's offer would help labor-strapped organizations with increased database functionality and easier manageability of the newer software.

At the same time, Niemiec added, Oracle can tout its growing support services.

JUST THE FACTS

Oracle's Upgrade2000

- Free Oracle8i CD database upgrade
- Open to unsupported users of Oracle Version 7.3.3 and earlier
- Only available through end of April

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BRIEFS

IT Trade Group To Rate Congress

The Information Technology Industry Council this year will rate U.S. congressmen and senators on issues including encryption, year 2000 legislation, digital signatures and fast-track trade negotiation. The Washington-based association will use its scorecard to recognize those who support its free-trade and innovation philosophies and to plan lobbying efforts.

Microsoft Slips On Office 2000 Release

Microsoft Corp. last week said Office 2000 won't be available until the spring. Last fall, it had said that the suite would ship in the first three months of 1999, but the product isn't yet finished.

Accounting Rule Gets Nixed

An accounting rule that computer vendors frequently employ to write off the research and development expenses of companies they acquire is on its way out. The Financial Accounting Standards Board (FASB) voted to kill the "in-process R&D" rule, which the Securities and Exchange Commission says is often abused. Vendor trade groups say they will fight the FASB decision.

Short Takes

NETSCAPE COMMUNICATIONS CORP. last week said it has picked VERISIGN INC. in Mountain View, Calif., to provide public-key-infrastructure (PKI) digital certificate and Internet trust services for its Netcenter portal customers. . . . This week, NAVISITE INC. in Andover, Mass., will add a new streaming media application, used in building electronic-commerce sites, to its Internet-based outsourcing services. . . . On March 9, SUN MICROSYSTEMS INC. will revise its NetDynamics application server to add support for Enterprise JavaBeans, improved scalability, additional load balancing and fail-over capabilities and dynamic applications updating without taking the server down.

E-BROKERS ALERT: INVEST IN SYSTEMS CAPACITY

Recent outages show risks of online service failures, benefits of spare capability

BY THOMAS HOFFMAN
NEW YORK

FOR ONLINE brokerages such as ETrade Group Inc. that have suffered embarrassing computer outages recently, the issue boils down to whether it's worth the money to safeguard system uptime.

"You can spend a lot of money on systems redundancy for the days you have huge [trading] volumes, but the question is, how much are you willing to spend and how much risk are you willing to take that you'll have an outage?" said Octavio Marenzi, research director at Meridien Research Inc. in Newton, Mass.

February probably seemed like the longest month to ETrade and Ameritrade Inc. ETrade suffered systems glitches because of a problematic server upgrade on Feb. 3, 4 and 5; Ameritrade customers were shut out by computer outages for 28 minutes on Feb. 8. On Feb. 24, Charles Schwab & Co.'s Web site went down during a mainframe install (see related story below).

Online brokerages "have been the victims of their own success," said Patricia McGinnis, an analyst at Mainspring Communications Inc., a Cambridge, Mass.-based research firm.

Although ETrade, Schwab and others have bolstered their capacity and backup capabilities in the past few years, "they simply haven't done enough," McGinnis said. To its credit, Schwab is simplifying its application architecture so trades don't make as many network hops to reach its IBM and Hitachi Data Systems mainframes [CW, Feb. 22].

NYSE'S WILLIAM BAUTZ: There's no tolerance for failure

While overly complex IT architectures contribute to online brokerages' reliability problems, bureaucratic business processes also are plaguing investors. A simple online stock trade has to go through a series of confirmations and approvals within a brokerage before it can be executed.

That's one of the reasons retail investors often have to wait hours before their trades are executed — and by then, rarely at the price at which they had hoped to buy or sell a stock.

Executives at organizations that process online trades for institutional clients had one key message for retail brokers: Bulk up on capacity, big-time.

The New York Stock Exchange, for example, can handle 600 messages per second (MPS), even though it has reached only 365 MPS at its peak, or 60% of capacity. NYSE is upgrading its systems capacity to handle 1,000 MPS in about five months and 2,000 MPS in the next year.

"There's no tolerance" for not being able to get an order through, said William Bautz, chief technology officer at NYSE, who gave a speech at IT for Wall Street '99, a conference that was held here last week. "If [investors] think they're getting bad pricing, they'll go somewhere else," he added.

Schwab Crashes During Online Upgrade

Call it growing pains. That's how Charles Schwab & Co. described last week's crash of its popular stock-trading Web site.

Workers installing a third mainframe to handle Schwab's increasing volume of traders brought the system down at 9:38 a.m. Wednesday. The site was back up just before 11 a.m., a spokeswoman said.

Schwab's existing servers can handle 100,000 sign-ons at a time. The third server will increase capacity to 250,000.

This was Schwab's third online meltdown in two months. Investors trying to trade during the crash could make trades by phone or go directly to a Schwab branch office. Those who had to wait more than five minutes were offered $500 off commissions in future trades. – *Stacy Collett*

Digital Protection for Health Care E-Mail

Fed pushes PKI to protect patient confidentiality

BY ROBERTA FUSARO

Emerging federal regulations will drive health care organizations to use public-key infrastructure (PKI) technology in the next five years to protect health records sent by E-mail, analysts said last week.

Health care organizations have been slow to adopt electronic document exchange because of privacy concerns. PKI is the protocol used in digital certificates, a form of electronic identification that attests to the identity of a person or company before decrypting files.

The biggest stumbling blocks toward development of PKI and electronic data interchange (EDI) networks in health care have been lack of data format and content standards, the cost of converting from paper-based to electronic systems and concerns about confidentiality of patient information, said Mark Gordon, leader of the Health Information Networks and Technologies project at Thomas Edison State College in Trenton, N.J.

For example, San Francisco-based Catholic Healthcare West plans to use PKI to secure its E-mail.

But until PKI is affordable and more standardized, the hospital chain is securing its E-mail network using nine S/MIME servers from WorldTalk Corp. in Santa Clara, Calif., so billing information, insurance claims and patient data isn't compromised as it traverses the Internet.

Meanwhile, Maimonides Hospital in New York hasn't considered using PKI because right now it's against state law to pass patient information and demographics over the Internet, said Greg Cullum, the hospital's director of network services. "And point-to-point, private encryption has been sufficiently inexpensive for now," he said.

But that's all changing.

Provisions of the Health Insurance Portability and Accountability Act of 1996 seek to standardize electronic transmission of most administrative and financial transactions.

The final regulations are expected by year's end, according to Gordon.

Meanwhile, health care conglomerates such as Kaiser Permanente, Catholic Healthcare West and PacifiCare Health Systems Inc. are looking for ways to adopt PKI.

They and a half dozen other hospital chains are part of The Tunitas Group, an association of health care companies that's helping to develop guidelines for cross-hospital document management.

JUST THE FACTS

Crypto-key Pairs

The difference between public and private key encryption

Public key: Stored in central directory, retrieved when a user needs to encrypt information to send to another user

Private key: Remains private to the end user, retrieved when a user needs to decrypt data that has traversed the Net

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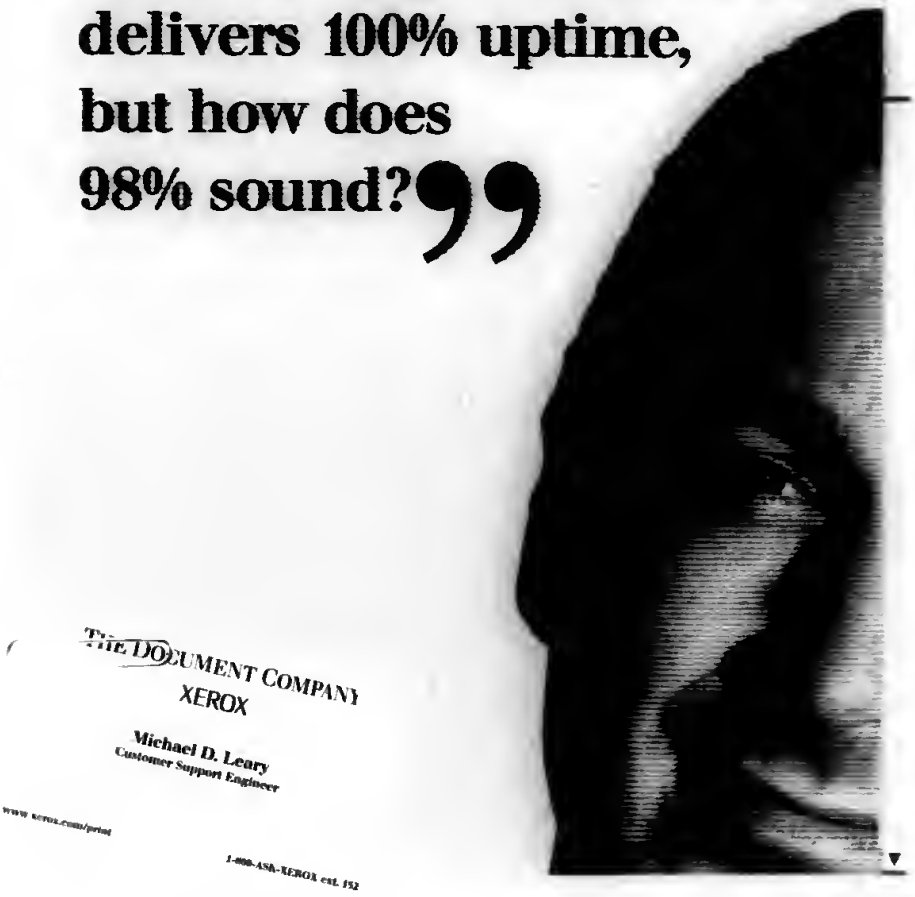

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LEVI SHUTS PLANTS, MISSES TRENDS

Marketing systems one key to digging out

BY STACY CULLETT

DESPITE WHAT observers say will be the inevitable belt-tightening in Levi Strauss & Co.'s IT department as a result of last week's plant closing announcements, the jeans maker will continue to invest in its pioneering custom-jeans technology and its online stores. But observers say the company needs to focus on new market research technologies, logistics and decision-support initiatives to reclaim lost market share.

Levi declined to discuss specific information technology plans. Company spokesman Jeff Beckman would say only that the closings and cuts were designed to improve Levi's competitive position and that "We'll invest more in communicating with consumers."

The San Francisco-based company has been losing ground in the denim jeans market since the early 1990s, when designer labels and trendier styles began taking over the market. Sales of $6 billion for calendar 1998 were the lowest in five years, forcing Levi to announce it will close 11 of its 22 North American manufacturing plants and cut 5,900 jobs by year's end.

Late to the Show

Some of the blame has been placed on the apparel maker's failure to appeal to the fickle fashion tastes of teens.

[illegible]	[illegible]	[illegible]
Levi Strauss	31%	17%
Lee, Wrangler	18%	25%
J. C. Penney/Sears brands	3%	20%
Designer labels	8%	7%
Gap Inc.	3%	5%
Other	38%	26%

"They were late picking up the new trends. So they'll want to invest in more market research technology," said Jim Lovejoy, project director at Textile Clothing Technology Corp. in Cary, N.C. He said one of Levi's competitors — Wrangler and Lee jeans maker VF Corp. in Greensboro, N.C. — has gained market share through "micro marketing."

VF tracks point-of-sale information on its brands and styles and those of its competitors. Then it manages inventory for its retailers. "Not only have they jumped onto new styles quicker, but they've also got their systems more market research-oriented," Lovejoy said.

"The technology for analysis has significantly improved over the last few years, and as they begin to test other segments of the market, decision support will enhance their profitability," said Robert Berger, president of Berger Advanced Management Services Inc., a retail industry consulting firm in Hillsborough, Calif. By using the technology only in test markets, Levi could determine what styles and colors will be profitable and could kill bad products before they reach sales channels, he explained.

Recent Bank Layoff Announcements

BANK	PLANNED LAYOFFS	ANNOUNCED
Bank One Corp. *Chicago*	200 (overseas)	February
First Union Corp. *Charlotte, N.C.*	Up to 7,200*	February
BankAmerica Corp. *Charlotte, N.C.*	18,000*	December
Barclays PLC *London*	1,100	January
Wells Fargo & Co. *San Francisco*	2,000 HQ staff	December
Mercantile Bank *St. Louis*	770	January

*Estimated

SOURCE: COMPANY REPORTS

Continued from page 1

Banks Spare IT

banks are based in Charlotte, N.C.

For these and other banks, such as Banc One Corp. in Chicago, which merged last year with First Chicago NBD Corp., most of the layoffs are expected to hit hardest in units where postmerger revenues are low and operations costly.

IT's Role

That's where IT steps in. Customer relationship management systems and data warehouses are hot on the plate of many big banks as they try to better identify profitable customers and cross-sell additional products and services to them. The upshot for staffing: "Fewer sales and servicing people are required in proportion to the business they're [generating]" because more of these tasks are being automated, said Patricia McGinnis, an analyst at Mainspring Communications Inc., a Cambridge, Mass.-based research firm.

Case in point: BankAmerica. The nation's second-largest bank, which merged last September with Charlotte-based NationsBank Corp. last September, is pilot-testing a customer relationship management system from Mountain View, Calif.-based Diffusion Inc. to help tailor delivery of information on wire transfers and maturing investments for its biggest corporate customers [CW, Feb. 22].

The seven-figure investment in the system should pay for itself quickly by generating more profitable services for existing and new customers, said BankAmerica senior vice president Rick Leander.

Another factor benefitting IT staffers during the current downsizing rage: Battle-scarred bank CEOs who have commandeered big mergers finally are learning that the savings they once expected from consolidating data centers and IT staffs just aren't realistic.

"Banks go into these mergers expecting to lay off all of the application development people at the other bank and reap huge savings, but integrating the systems is so difficult and risky that extra contractors are needed and the costs go up," said Octavio Marenzi, research director at Meridien Research Inc.

Bank CEOs often expect 30% to 40% reductions in IT costs after a merger, but typically see no change because overlapping deposit and other redundant systems can take years to consolidate and are costly to maintain, he added.

"After a merger, your highest priority becomes not developing something new, but deciding what's going to stay and what's going to go. Everybody's so busy doing that work that everything else gets put on the back burner," said Jan Nicholas, a Perot Systems Corp. project manager on assignment recently at BankAmerica. But that isn't to say IT layoffs never occur.

First Union dismissed plenty of IT workers during a recent buying spree that included purchase of Philadelphia-based CoreStates Financial Corp., said an IT manager who requested anonymity. But the manager said First Union later rehired a lot of the people "because [management] realized they needed their skill sets."

Baan Puts Brakes on Hiring

Software maker to announce $250M loss

BY CRAIG STEDMAN

Struggling Baan Co. is taking more steps to cut costs as it prepares this week to report an expected $250 million loss for the fourth quarter of 1998.

The Dutch software vendor last week confirmed that, outside of sales and customer service, it plans to limit the hiring of new employees to replace workers who leave. Even product development teams may be replenished only on "a case-by-case basis," said Mark Hamilton, senior vice president of global marketing.

Baan also has canceled the two BaanWorld user conferences scheduled this year in the U.S. and Europe. The company said the conferences will be replaced by a series of smaller "town meetings."

In addition, the company is looking to chop expenses by $15 million per quarter through savings in areas such as business travel and office supplies.

But Hamilton said reports that Baan may lay off more workers "mischaracterized" an internal memo that was sent to employees at the company, which makes enterprise resource planning (ERP) software and other applications.

"We think we've done all the head-count reductions we need to do," he said. "The [ERP] market could continue to slow down more than we expect, and then we might have to do something. But that's not on our current radar screen."

The more important question is how Baan can keep key workers from leaving for more secure jobs, said Josh Greenbaum, an independent analyst in Berkeley, Calif. "They don't have to lay anyone off," he noted. "People are walking out the door right and left."

Hamilton acknowledged Baan is losing workers but said the attrition "is not unmanageable or beyond expectations."

Capitol Hill Update: SAFE Act, Y2K, IT Tax Credits on Table

BY COMPUTERWORLD STAFF

High technology had high visibility in Washington last week as the political spotlight bounced from encryption export concerns to IT tax credits to year 2000-readiness. For starters, Rep. Bob Goodlatte (R-Va.) and Rep. Zoe Lofgren (D-Calif.) reintroduced their Security and Freedom through Encryption (SAFE) Act with the bipartisan support of 205 House members.

The legislation would permit export of all encryption products except those designed or modified for military use. This is the third time the House has tried to pass the act, which has been vigorously opposed by law enforcement agencies seeking to limit the strength of U.S. cryptograpby products to a crackable 56 bits.

KNIGHT RIDDER

REP. ZOE LOFGREN (D-Calif.) gained the support of 205 House members for the SAFE Act

In other news, Sen. Kent Conrad (D-N.D.) and Rep. Jim Moran (D-Va.) introduced a bill to give tax credits to employers retraining workers for jobs in information technology. The bill, which would give businesses credits of up to 20% a year — or up to $6,000 per worker — for technical training, was praised by several high-tech trade groups.

Y2K: Ready or Not?

A bipartisan group of House members introduced a "Year 2000 Readiness and Responsibility Act of 1999" aimed at providing incentives for groups to enter mediation and arbitratioo to limit costly litigation over expected year 2000 computer problems. The bill would limit attoroey's fees and create a nationwide year-2000-liability standard.

The notion of year 2000 arbitration got a thumbs-up from Leon Kappelman, head of the Society for Information Management's Year 2000 Special Interest Group. But Kappelman, an IT professor at the University of North Texas, said he opposes liability limitations because they may "build walls" between vendors and user companies; legislators should instead be easing the year 2000 information flow, he said.

Finally, an IT lobbying group last week weighed in with views about the movement of research and development overseas when U.S. tax credits expire this summer. The Information Technology Association of America, based in Arlington, Va., called on Congress to make the temporary research-and-development tax credit permanent as both chambers introduced bills on the subject. The credit has been granted yearly since 1982; this year's will expire June 30 ▶

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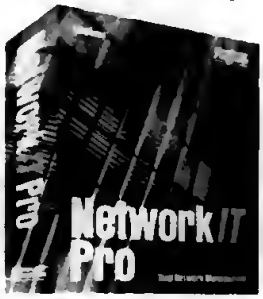

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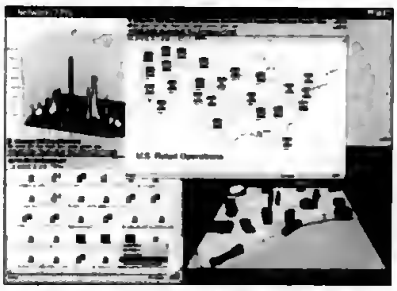

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ERGONOMICS PLAN MAY FORCE OFFICE REDESIGN

Critics call changes costly; agency says lost workdays cost U.S. nearly $20B

BY BARB COLE-GOMOLSKI

AN OCCUPATIONAL Safety and Health Administration (OSHA) draft regulation on ergonomics could require information technology departments to revamp workstations and redesign their offices to reduce the risk of employee injury.

The OSHA proposal was announced Feb 19. If approved in the fall by the Labor Department, employers would have to offer medical care and time off to injured workers and set up a system for employees to report potential hazards. They also would be required to analyze the potential for worker injury in departments in which such problems have been reported.

According to OSHA, job-related musculoskeletal disorders are responsible for more than 640,000 lost workdays per year in the U.S. Those injuries cost employers $15 billion to $20 billion per year in worker compensation costs, the agency said.

"Anybody that uses the computer extensively is at risk [for this type of injury]," said Tom Albin, an ergonomist at 3M Co. in Minneapolis. IT workers, with their penchant for working on laptops and moving around to various workstations not customized for them, are likely to suffer from afflictions that would be covered by the OSHA regulation, Albin said.

Albin said he supports OSHA's move and that companies would benefit from paying more attention to ergonomics. For instance, 3M was able to eliminate about 90% of computer workers' carpal-tunnel syndrome woes and back problems by designing ergonomically correct workstations, he said. Minor changes like using a wrist rest, adjusting keyboard height to maintain a relaxed posture for the shoulders, elbows and wrists and using an antiglare filter on a computer screen can make a big difference, Albin said.

Still, some business groups warned that the regulations are premature and too far-reaching. Peter Eide, a labor law manager at the U.S. Chamber of Commerce in Washington, called the proposal "a blank check for OSHA inspectors that would require all American businesses to become full-time experts in ergonomics."

JUST THE FACTS

Workplace Comfort Rules

What OSHA's draft proposal on ergonomics says:

- Employers aren't required to analyze all of their jobs at the outset
- The occurrence of work-related muscular and skeletal disorders would trigger a job hazard analysis
- OSHA will provide free, on-site consultation and materials for companies to use as a guide

SOURCE: OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION, WASHINGTON

Telecom Vet Sees Both Sides of Technology

ICA chair reflects on Y2K, convergence, competition, the impact of technology

Ruth Michalecki, chairman of the International Communications Association (ICA), has announced plans to help the network managers' user group grow. The 50-year-old Dallas-based ICA has 400 member companies, down from a high of about 700 a decade ago.

The ICA plans to open its membership to individual data managers, moving beyond telecommunications managers enrolled as a company. The group also will join forces with private companies to expand its Web site (*www.icanet.com*) and its educational programs.

At 73, Michalecki is telecommunications director at the University of Nebraska in Lincoln and is the only user representative on the Federal Communications Commission's Network Reliability Council, which helps the FCC oversee year 2000 readiness for data and voice networks. She spoke with *Computerworld* staff writer Matt Hamblen.

Q: Many user groups are losing members. Are they irrelevant?

A: No, they're more important today than at any time — as a way to keep up with multiple vendors' new products and services and trends. People in user groups are very frank with one another when they want to get the lowdown on a problem with a product.

Q: Voice network managers are getting swept up by the data shops in large organizations. Is that frightening for people like you?

A WITNESS to decades of technological change, Ruth Michalecki hopes we "remember to be human"

A: No, convergence is good. Voice is going digital, and pretty soon there will be a blur. You won't have a handset and a PC and other devices at your desk. They'll be one. That has huge implications for companies, so IT has to do more planning and get budgets much higher. There will be plenty of jobs for the former telecom managers.

Q: Has the refocused Network Reliability Council found any important gaps in network Y2K readiness?

A: Most networks will work, but the biggest unaccountable is in some foreign countries, which will affect multinationals. American companies need to have alternative plans where they can feel a level of comfort.

Q: Is the FCC helping business users by helping create a competitive service environment?

A: The FCC hasn't done a lot to encourage competition. But competition isn't going to happen overnight as some envisioned with the 1996 Telecom Reform Act. I'd like to know why consumers and businesses should pay $1 to $5 for a number portability charge on each phone line to help a Competitive Local Exchange Carrier.

Q: You've seen a lot of technology change in your career. Does anything keep you up at night?

A: I worry about technology putting too many demands on our time. When we come in first thing each day, we turn on E-mail rather than saying 'hi' to each other.... People need to remember to be human. I worry that kids are spending too much time behind computers and not swimming and playing outside. I asked my grandkids, who are very computer proficient, 'did you ever lie outside on the ground and look up at the clouds and see them form trains and ships?' And they looked at me like I was crazy.

Middleware Vendor BEA Adds Support for Server-Side Java

BY DAVID ORENSTEIN

Two enterprise application development products announced last week by BEA Systems Inc. are likely to be useful but will offer users little more functionality than is already available, analysts said.

At its user conference in New Orleans, the San Jose, Calif., middleware vendor said it will offer an enterprise application integration product family, eLink, and change the name of its M3 Object Request Broker (ORB)-based middleware to Web Logic Enterprise and give it server-side Java functionality.

The enterprise application integration product, based on BEA's middleware framework, was designed to enable users to incorporate third-party technologies to tailor the product to their specific needs, such as connectivity with SAP AG's R/3 environment.

David Kelly, an analyst at Hurwitz Group Inc. in Framingham, Mass., said that because BEA's middleware is highly scalable and transaction-based, users may find it unique. But BEA also needed to be in the enterprise application integration market to keep up with competing vendors like IBM, he said.

The integration of M3 into the Web Logic Java application server line appears to be a rebranding effort, said analyst John Rymer at Upstream Consulting Inc. in Emeryville, Calif. BEA has long intended to integrate its ORB and Java products, he said, but the Web Logic name has proven to appeal to enterprise users more.

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WEB-BASED CASINOS ARE BEATING THE ODDS

E-commerce 'pioneers' survive politics, tech limits and hurricanes

BY KIM S. NASH
ST. JOHN'S, ANTIGUA

HERE AMONG the storefronts made of plywood and painted ice-pop colors, there grows a strain of electronic commerce that faces obstacles even Amazon.com couldn't imagine.

Internet gambling operators must gird their sites for multiple simultaneous users who pound through rounds of blackjack and online roulette — at 40, 50 and 60 clicks per minute.

They also must support many languages besides English to attract players in Europe and Asia, where online betting isn't so legally iffy.

Perhaps most nettlesome are the financial transactions. Wire transfers, credit cards, bank drafts, personal checks, electronic currency, even cash: They all are forms of payment acceptable at one gambling site or another.

And Amazon.com doesn't have to worry about how to pay out $50,000 jackpots.

STARNET's TERRY BOWERING: He says Internet gambling is a legitimate form of electronic commerce that lawmakers don't understand

Hitting the Jackpot

But as usual, the house is raking in the cash. Online gambling is a $535 million industry worldwide that's expected to grow to $10 billion in three years, according to Datamonitor PLC, a market researcher in London. An estimated 200 Web sites currently lure surfers to virtual slot machines, craps and other Las Vegas-style games.

There's just one problem: U.S. police say online gambling is illegal under a 38-year-old law — and they're starting to prosecute. Moreover, the U.S. Congress is expected to outlaw Internet casinos outright (see story, next page).

So gambling entrepreneurs from the U.S., Canada, the U.K., Israel and other countries have set down roots on Caribbean islands, particularly this one. Antigua is one of just a few countries to legalize online gambling. In fact, Antigua invites it.

"Gambling provides revenue to the country but also employment and indirect economic benefits," said Vere Murphy, commissioner of the Free Trade and Processing Zone, which licenses and regulates Internet gambling companies here.

Murphy says he sees himself as something of a cybercop, enforcing licensing laws and chasing away lawbreakers. So far, he's collected $6 million to $7 million in license fees from the 32 online casinos and sports-betting sites he has sanctioned.

Terry Bowering has paid his $100,000 annual license fee to Antigua and scoffs at the idea that online casino executives run a crooked business, hide from the law or fleece naive Internet users.

For Bowering, vice president of offshore operations at Starnet Communications International Inc., Internet gambling is a legitimate form of electronic commerce that lawmakers just don't understand.

"We're pioneers. We're the future. We're sticking to a marketing strategy and a business plan," said Bowering, a 38-year-old former stock broker and financial consultant. "We're not typical bookies. We're MBAs."

Even so, Starnet, which is based in Vancouver, B.C., is careful to do all bet-processing and money transactions on servers here to guard against Canadian and U.S. police action.

Last year, Starnet's casinos group saw 6 million hits daily; the average spent per bettor visit was $200, he said.

Starnet wouldn't mind being a takeover candidate for land-based casinos: "Once the smoke clears, they will look at a company like us to get them online," Bowering said.

Each of the 14 gambling executives interviewed by *Computerworld* claimed to be bringing a businessman's order to the largely untested world of Internet wagering.

"We don't sit here drinking umbrella drinks," said Peter Bengtsson, managing director of Boss Casinos Ltd. "We deal with other people's money and must have backup procedures and a fire-safe area and strict rules. It's almost a bank."

For example, some companies have hired Big 5 accounting firms to sign off on their business plans and certify, as best they can, that the software is fair to players. English Harbour Casino Ltd., on the southern tip of the island, uses Deloitte & Touche LLP, while Boss Casinos employs PricewaterhouseCoopers.

Playing by the Rules

Meanwhile, Starnet and rival Inland Entertainment Corp. in San Diego, which runs three online casinos, like to point out that they're publicly traded firms that must report detailed company data.

Starnet, for example, posted $1.8 million in sales for its most recent quarter and showed $248,000 in profit. Inland isn't profitable yet.

Managing risks — financial, legal and security — is what the business is all about.

ONLINE GAMBLING SITES such as Casino On Net (above) are pulling in millions in Web wagers while staying one step ahead of the law

One's a Planner, the Other's a Fugitive

ST. JOHN'S, ANTIGUA

Before it started business in Israel, Cassava Enterprises Ltd. thought hard about how to structure the company to ward off U.S. legal trouble.

People who maintain Cassava's betting servers are here and its programmers are based in Israel, said Jordan, the company's operations manager and a former international business lawyer. To preserve Cassava's privacy, he asked that his last name not be used.

When Jordan scouted out Antigua two years ago, he didn't know if the business would fly. "At the time, it looked like a nice way to spend a year in the Caribbean."

He says he thinks the FBI and other U.S. law enforcers probably pose as players to snoop around his site.

If the U.S. tries to snag Jordan, he knows what he'll do. "I'm going to say, 'American law is all fine and dandy. [But] I'm not an American company and none of my employees are U.S. citizens.' They have a big problem with jurisdiction," he said.

That may be so, but Steve Schillinger, an 18-year veteran options trader on the Pacific Stock Exchange in San Francisco, is now a fugitive.

Nearly three years ago, he and a colleague quit their finance jobs to start a sports-wagering business here.

Schillinger moved his wife and four kids here and World Sports Exchange was born.

The company is licensed and complies with Antiguan laws, but the FBI and New York state prosecutors in March 1998 charged Schillinger and his partner – along with a dozen other online sports betting operators – with federal crimes (see story, next page).

While his partner returned to the U.S. to fight the charges, Schillinger stayed to run the company. "If I flew to the U.S. right now, I would be arrested and charged. I haven't left Antigua since I came down here," he said.

It's the real-time excitement of the business that keeps him going. "It's similar to what we were doing trading stocks," he explained. "I make markets on sporting events. We're the only book that allows people to bet all during the games. I constantly adjust markets."

His family, however, moved back to California 18 months ago. They visit the island about six times per year, and the children spend summers with their father.

But living here full-time didn't cut it for them. "It's not a great place to raise young ones. There's no Little League baseball or basketball," Schillinger said. "There's nothing here for them to do."

– Kim S. Nash

Bengtsson, a 30-year-old ex-blackjack dealer in banker's clothes, runs Boss Casinos, which is one of the biggest online gambling operations here. The company, which has headquarters in Sweden, employs 30 people locally, mostly in telephone support and risk analysis.

Boss Casinos moved into a snow-white, five-story building — one of the tallest in this capital city — after Hurricane Georges blew the roof off its former quarters in September. Operations were down for more than two days.

In the new locale, Bengtsson plans to set up a locked and guarded server room in which to house six Sun Microsystems Inc. servers, one for each of the gambling sites he runs for other companies.

Two Compaq Computer Corp. servers running Microsoft Corp.'s Windows NT process bettor payments. (Boss Casinos charges maintenance fees and takes an additional cut of the revenue from each client.)

"Security we take quite seriously," Bengtsson said. The credit card, passport and other data requested of players "never leaves this building. All staff is cleared by Interpol," he said. Gun-toting local police also watch the premises 12 hours a day.

The four information technology people at Boss Casinos all are transplanted Swedes. "We tried to recruit from locals but they don't have the skills," Bengtsson said.

Cost of Doing Business

Software development costs are the biggest expense for Internet gambling firms. GLC Ltd., which does business on the nearby island of St. Kitts, has spent $20 million in the past three years to set up its GalaxiWorld online casino, said Larry Weltman, chief financial officer at the company in Gibraltar, U.K.

Hiring programmers well-versed in Sun's Java language is expensive but worth it, according to Weltman, 37. Instead of having to download fat software files before playing, users spend one to three minutes installing various Java applets, he said.

More than 1,200 registered players placed $3.1 million worth of wagers in GalaxiWorld's first month in action. Page hits totaled 3.2 million.

"You play my game, and it's a real live transaction taking place," he said. That's different from Amazon.com, where "one customer buys two books, and it may [take] two or three weeks to deliver," added Weltman, a former lottery company manager.

"We gotta be fast. There are too many other choices out there for players," he said. ◗

A U.S. Ban is Coming

The U.S. hasn't passed any laws to ban Internet gambling yet, but Congress is fixing to do so.

Last session, the Senate passed the Internet Gambling Prohibition Act, a bill sponsored by Sen. John Kyl (R-Ariz.). It didn't pass in the House of Representatives, but it's expected to when it's resubmitted this year.

The bill would ban all forms of online betting and put operators of such Web sites at risk for a fine equal to the site's total wagers and four years in jail. Critics say the idea is unenforceable. The U.S. can't expect to push its Internet laws on other countries, especially those where Internet gambling is explicitly legal.

Still, even without a specific federal law against Internet gambling, the FBI and various states are on the move.

They figure that the Internet is covered under the 1961 Interstate Wire Act, which outlaws betting over interstate or international wires, such as the telephone system.

Law enforcers in New York, for example, worked with FBI agents last year to issue arrest warrants for operators of six online sports books.

The companies were based outside the U.S. – in the Caribbean and Central America – but are bound by U.S. laws because they advertised in the U.S., took bets from Americans and used the Internet and telephone to do it, the agencies said. Some also had secondary offices in the U.S.

The cases are working their way through the courts with at least one would-be felon fighting the charges.

– *Kim S. Nash*

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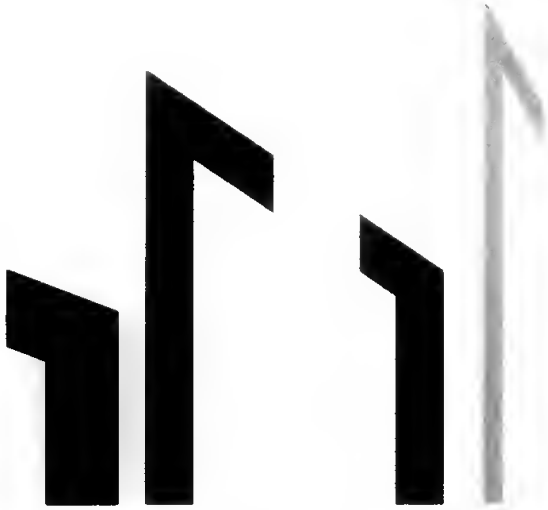

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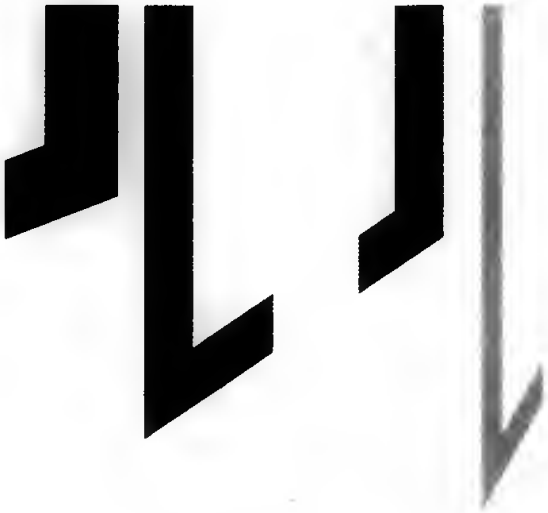

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Financial	241,467

VeriSign, Netscape Ally

VeriSign Inc. and Netscape Communications Corp. last week announced a multipart deal that includes a cobranded Netcenter Security Center, expanded integration of VeriSign's digital certificate services with Netscape's client and server products and the selection of VeriSign as the preferred provider of Internet security services for Netscape customers. The agreement could benefit online merchants, who will be able to access VeriSign digital certificates from Netscape's Netcenter Web portal.

Brio Acquires Sqribe

Business-intelligence software maker Brio Technology Inc. has purchased SqribeTechnologies Corp. for approximately $270 million in stock. Adding Long Beach, Calif.-based Sqribe's product lineup to Brio's could create "a technology powerhouse for the next generation of Internet-enabled business intelligence products," said David Folger, an analyst at Meta Group Inc. in Stamford, Conn. Sqribe's strengths in enterprise reporting and enterprise information portals are a nice fit with Brio's business-intelligence tools, Folger added.

Vendors Boost Budgets

Technology vendors are practicing what they preach. Nearly four in 10 top executives at high-tech firms plan to set aside more of their operating budgets for information technology this year, according to a survey by PricewaterhouseCoopers in New York. On average, high-tech firms are allocating nearly 8% of their annual operating budgets to IT, according to the survey of 376 industry executives.

PLATINUM TECHNOLOGY GOING BACK TO BASICS

Unprofitable software company to shed products, people; digest many acquisitions

BY STEWART DECK

EXECUTIVES AT Platinum Technology Inc. said last week that it's finally time to digest several years' worth of acquisitions.

The software maker will take a one-time, $90 million to $110 million restructuring charge and lay off 1,000, or 15%, of its workers.

Platinum Technology will shed some product lines and focus its energies on its database software, ProVision enterprise management suite and data warehousing products, said Michael Matthews, who is executive vice president of worldwide marketing at the Oakbrook Terrace, Ill.-based company.

Analysts said the restructuring should benefit the company. "A lot of this seems to be aimed at reaffirming their focus on decision-support software, which is what they do well," said Philip Russom, an analyst at The Hurwitz Group Inc. in Framingham, Mass.

Robert Johnson, an analyst at ABN AMRO, a New York investment bank, said the reorganization should help boost Platinum Technology back to growth rates near 20%, which he said are "the type of results investors are seeking."

The company reported a net loss of $2.5 million for fiscal 1998 on revenue of $986 million. It hasn't had a profitable year since 1993 but has made more than 50 acquisitions during the past few years.

Recent acquisitions included data-modeling specialist Logic Works Inc., training company Mastering Inc., software vendor Learmonth & Burchett Management Systems Inc. and Israeli security company Memco Software Ltd.

Now the company is opting to slow down acquisition activity in favor of consolidating its collection of businesses. "The last couple of years we focused on growth and momentum rather than being 100% conscious of efficiencies," Matthews said. "In the last six months the investment community has started comparing us to older, more established companies, which has affected our stock price."

PLATINUM VP Michael Matthews: Focus on efficiency

The restructuring "is intended to enable us to fully leverage the strong technology and talent we have in place in order to deliver sustainable value and increased profitability in 1999 and beyond," said Andrew Filipowski, Platinum Technology president and CEO.

The company is unrelated to the similarly named Platinum Software Corp.

The largest cuts will come from the company's Virtual Reality Modeling Language (VRML) product development staff, in which 300 jobs will be cut, and its training and consulting division, in which 550 people will be laid off. To divest itself of the VRML staff, it will put the source code for its Web visualization software products in the public domain by providing it to the nonprofit Web3D Consortium (*www.web3d.org*.)

Clare Haney of the IDG News Service contributed to this report.

Compaq Calls for an Internet Time-Out

PC maker freezes sales to Web-only retailers to establish policies

BY SHARON MACHLIS

Compaq Computer Corp. has asked its distributors to temporarily suspend sales of its Presario line of home PCs to about 10 Internet-only retailers while it develops policies for selling its products online.

The Houston-based PC maker, which plans to develop a sales program specifically for the Internet channel, aims to have the new policies in place within 90 days, spokeswoman Hedy Baker said last week. "It's a much different way to look at a business model," she said.

Though she wouldn't comment on matters to be decided by the new Internet selling program, she said programs for traditional retailers typically include guidelines for things like in-store literature, displays and product demonstrations.

Compaq wants to develop similar programs that will be appropriate for the Internet.

A "handful" of Web retailers were affected by the temporary suspension, Baker said, but not companies that do most of their business in brick-and-mortar stores and also sell online.

"Obviously they've seen the Internet channel become a bigger and bigger part of their business. They want to take a time-out and get their act together," said Darryl Peck, president and CEO of Cyberian Outpost Inc. in Kent, Conn., one of the Internet retailers affected by Compaq's move. "It's not a big deal."

Cyberian Outpost still has Compaq goods in stock and will keep selling them but currently can't replenish its inventory. Peck said he expects Cyberian Outpost to be reauthorized to sell Compaq PCs when the new policies are in place because it maintains a fairly traditional sales model of keeping merchandise in stock and because it offers sales and support services.

CYBERIAN OUTPOST is one of the Internet retailers affected by Compaq's move

Compaq's temporary halt in sales to Web retailers wasn't over pricing issues, Baker said.

However, several outside observers believe the company has to be concerned about price because some Internet-only companies are selling goods at cost and are talking about selling below cost (with advertising making up the difference) — or even giving machines away.

Could Backfire

"What is the price [cutting] doing to their brand?" asked Melissa Bane, an analyst at The Yankee Group in Boston. Price slashing can "reduce the brand equity manufacturers built up," she said.

Bane said Compaq probably is wise to take time to think out a strategy for controlling how its products are sold on the Web.

If there are problems with customer service or support from a cut-rate Internet site, "at the end of the day, the name on the machine is Compaq," she said.

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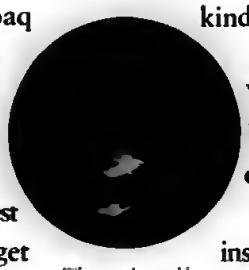

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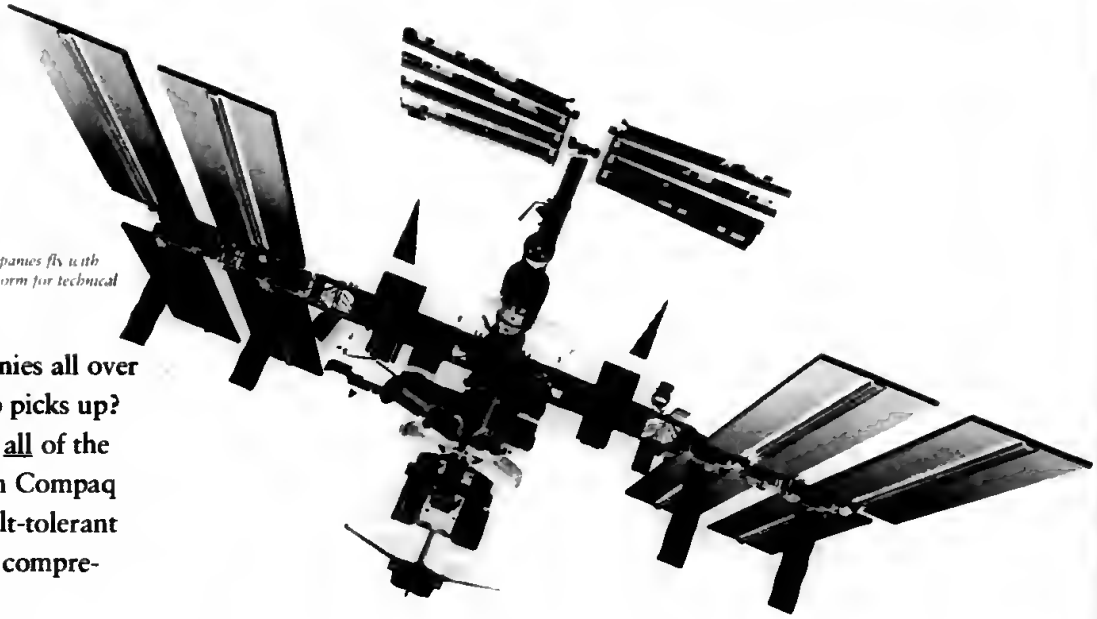

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MARYFRAN JOHNSON

Get smart, get small

TINY THINGS ARE HAPPENING in the world of technology and their impact is going to be enormous. Last week's low-key announcement by IBM about its latest advance in "system-on-a-chip" technology was yet another signal flag on the future's horizon.

With technology capable of putting as many as 24 million transistors on a single silicon chip, entire computers can be reduced to the size of your thumbnail. And the cost per chip is shrinking just as rapidly, making "infoappliances" packed with embedded technology a sure bet to be the next generation of computing.

MARYFRAN JOHNSON is executive editor of *Computerworld*. Contact her at maryfran_johnson@computerworld.com

"We'll put computers into things nobody ever thought of before," says Paul Saffo, a director at the Institute for the Future in Menlo Park, Calif. He was one of the experts we talked to for this week's "smart materials" story (see page 70).

Within five years, minuscule processor/transceivers will be widely available to do everything from megaboosting data storage to earthquake-proofing buildings. Only 18 months from now, we should see the prototypes of a storage device that can pack 60G bits of data in a square inch of space. Already, smart phones no bigger than your hand are combining cell phone, pager and handheld computer into a wireless device with Internet access (see this week's QuickStudy on page 73).

No matter what Intel and Microsoft tell us now, personal computers as we know them today — from those big, complex lugs on the desktop to those laptop millstones we drag through airports — will not define 21st-century computing. Yearly PC sales are expected to top out at about 100 million units worldwide, but infoappliances are projected to hit 600 million in annual volume in the next five years.

All of this poses intriguing challenges for IT departments on every front, from user support to infrastructure planning to conflicting software standards. But the unmistakable trend is so encouraging because the mantra for the new millennium will be this: Smaller, smarter and simpler to use. ▶

ALLAN E. ALTER

Old-timers are taking over the Web

STAND ASIDE, KIDS — the old-timers are taking over the Web. And they'll change the look and content of the Web when they're done. That may be a shocker to some who are fixated on the Internet's hip, youthful aura. But get with it: The seniors are catching up fast.

Consider online buying: Older Americans, not twentysomethings, are leading the stampede.

The age group with the highest concentration of online buyers is the 50 to 64 segment, at 27%; the fastest-growing segment is 65 and over — just 4% last year, but up to 16% this year.

Altogether, 68% of online buyers are over 40, according to a survey released last month by Ernst & Young and the National Retail Federation.

ALLAN E. ALTER is *Computerworld*'s senior editor, Managing. Contact him at allan_alter@computerworld.com.

In my family, the Webheads belong to the older generation. I taught my mother-in-law how to surf the Web a year ago.

Now she's the one telling *me* about great new Web sites and has volunteered at the online exhibit of a nearby museum.

Her cousin the history buff gets a charge checking out Cold War sites and digging up declassified documents. My Uncle Joe, who's hard of hearing, chats with his buddies on America Online. Even my mother is throwing in the towel and getting a PC. She doesn't want to be left behind by her friends.

Neither does the American Association of Retired Persons: The AARP's research has found senior citizens are the fastest-growing segment of the Internet community.

Seniors do have to learn how to relate to computers, but "when seniors get past their fear, they become the most energetic, enthusiastic computer users you've ever seen," says Sandy Berger, who hosts the AARP's computers and technology page (*www.aarp.org/comptech/*).

For elderly people who can't travel as before, the Web brings the world to them and helps them stay mentally active. Physically active seniors appreciate the Web as a tool for daily living, providing information, convenience, entertainment and connection to family.

What does that mean to businesspeople? Seniors are an affluent market with real needs and time on their hands to do some serious surfing. The travel, financial services, health, retire-

A single face to the customer

Delivering customer satisfaction by managing expectations with a fully integrated enterprise system

including:

- sales effectiveness
- front- and back-office connectivity
- customer service
- dynamic scheduling

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All of us, as consumers, have had unfortunate experiences with a retailer whose left hand didn't seem to know what its right hand was doing. Whether we were buying a stove, refrigerator, or some other appliance, the retailer just couldn't get it together when it came to model number, delivery date, or service agreement. As a manager in a manufacturing enterprise, you can't be that chaotic with your customers. That's why it should be of interest that there is a new generation of business software systems that fully integrates customer management services with production planning, distribution, and financial applications.

More powerful than their predecessors, contemporary business applications come in sleeker packages with updated features that make it easier for their operators to negotiate any hazards that might impede their path to business success. Leading this new class of fully integrated business systems is a package called ERP Plus™ from Tampa, Fla.-based **PowerCerv Corp.** This system is the type of seamlessly integrated, enterprisewide business computing software that nearly all enterprise resources planning (ERP) vendors say they now offer, but that users find, when they look under the hood, very few suppliers actually deliver. "I really was surprised to find that PowerCerv was the only company whose system was truly integrated from end-to-end. I expected more vendors to have that type of integration," says Mike Dumas, MIS manager for **Automata International**, a printed wiring board manufacturer based in Sterling, Va., that recently selected ERP Plus as its enterprise computing platform following a search that began with a list of 20 ERP suppliers.

A single face to the customer

ERP Plus software connects the front and back office to achieve customer satisfaction

Sidney Hill, Jr.
SJR Communications
Albuquerque, N.M.

The type of integration Dumas speaks of blends strategic applications such as sales force automation and customer support—the so-called front-office systems—with the transaction-oriented systems that organize back-office operations like manufacturing, distribution, and financial management. Manufacturers increasingly covet this type of integration because it enhances their ability to continuously improve the one remaining area in which they still can gain a true competitive edge: customer service.

Information, not data

John Montague, PowerCerv's senior vice president of marketing, says ERP Plus facilitates the free exchange of not just data, but information, throughout an enterprise, thereby enabling manufacturers to show "one face to the customer." That means anyone within the enterprise who might speak with a customer—a field salesperson, the CEO, even a warehouse worker—enters the conversation armed with the same up-to-date information about all previous contacts that customer has had with the company.

Todd Ouellette, director of information systems with **Lorin Industries**, a manufacturer of coil aluminum products based in Muskegon, Mich., confirms that statement. "We are gaining market share over our key competitors," says Ouellette, whose company has been using the ERP Plus suite for more than a year. "Our customers have told us many times over the past 12 months that the reason our business is growing is because we are giving them more detailed, accurate, and up-to-date information than our competitors are capable of providing."

Scott Galloway, PowerCerv's vice president of ERP solutions, says ERP Plus gives companies a competitive edge simply by empowering their sales and customer-service representatives to make promises that the rest of the company can keep. "Everybody wants an ERP system to help them increase sales by making their customers happier," Galloway says. "The best way to make customers happy is to deliver on your promises, and the best way to do that is to set customers' expectations properly from the beginning."

A missed opportunity

Galloway notes that ERP systems historically have been good at calculating the cost and time associated with building specific products, but these systems generally have done a poor job of making that information available to anyone outside of the production and finance departments. Consequently, salespeople often are forced to give customers their best guess as to whether certain products can be delivered, because they don't have information on such things as material availability, capacity availability, or accurate pricing and configuration logic.

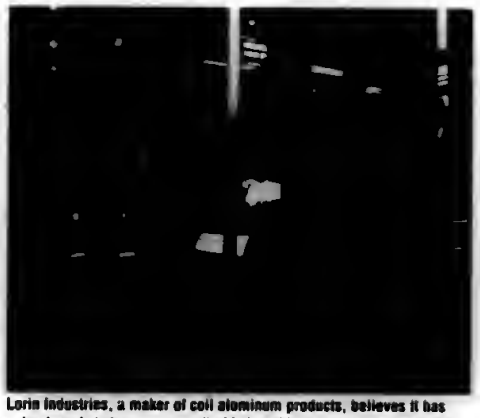
"As a group, ERP has missed a real opportunity by not providing this information to salespeople, so they could use it to set customers' expectations properly at the outset," Galloway says. "We have extended the reach of ERP to let salespeople talk truthfully to customers and prospects about product pricing, availability, delivery status, and even problem-tracking on the post-sale side.

"Providing that information has a big impact on an entire company, because everyone knows salespeople are setting customer expectations based on realistic information," Galloway continues. "That means the operations people are not confronted with constant schedule changes and they no longer find themselves frantically hurrying and scurrying to satisfy specific customers. The end result is everyone marching to the same beat in terms of keeping commitments to customers."

The ERP Plus suite consists of five major modules: Manufacturing, Distribution, Financials, Sales Force Automation, and Customer Support. The entire suite is composed of object-oriented components built on widely used, open technology. ERP Plus can run on the Windows NT or UNIX operating platforms, with either Microsoft's SQL Server or Sybase as a primary database. The system is completely Web-enabled and Year-2000-compliant. It also features a rules-based product configurator and an underlying workflow engine that can be used either as a basic communications tool or as a means of facilitating collaborative work processes. The latest version of the system, which was released this past November, contains an advanced planning & scheduling (APS) module, and a new executive information module called PowerCerv Intelligence that aids management efforts to continuously monitor and improve a company's overall performance.

Instant communication

Ouellette says ERP Plus will bolster Lorin's customer service efforts by facilitating instant communication between its sales staff and the rest of the company. "When our salespeople walk into a customer site, they will have, on their laptop computers, accurate information about that customer, as of the last time they were connected to the system," Ouellette explains. "And even while they are in the field, they will be able to connect remotely to the system and get up-to-the-minute information about any customer. The customer's shipments, invoices, payments, and more are listed in chronological order."



Lorin Industries, a maker of coil aluminum products, believes it has gained market share as a result of being able to provide detailed, up-to-date information taken from the ERP Plus software suite. (*Photo courtesy Lorin Industries*)

Lorin's salespeople also use the workflow engine to enter notes about specific support they will need to meet particular customers' needs and route that information to all of the appropriate people within the company. These notes often are accompanied by attached documents, including sales proposals that provide engineering and manufacturing personnel with the information they need to determine if a particular product can be built. Support people can send return messages detailing the specific actions they are taking on behalf of individual customers.

The ideal midrange solution

PowerCerv designed ERP Plus specifically for mid-sized manufacturers, primarily companies with up to $1-billion-a-year revenue range, or divisions of larger corporations that fit that profile. For many of these companies, ERP Plus represents the best information technology (IT) solution. The system's state-of-the-art client/server architecture allows them to distribute specific applications exactly as they are needed throughout an enterprise—even linking remote facilities and personnel to a central database. At the same time, its full end-to-end integration eliminates the need to purchase separate systems from a host of different vendors. That approach, commonly known as a best-of-breed strategy, was hailed as a panacea in the late 1980s and early 1990s for large companies whose aging, monolithic, mainframe-based systems were hindering their ability to adapt to fast-changing business conditions. However, few mid-sized enterprises can expend the necessary resources to support a best-of-breed approach.

"Two factors made us look at an integrated system instead of adopting best-of-breed, cost-of-installation and cost-of-ownership," says Richard Buckmaster, director of strategic projects for Dallas-based **Interphase**, a $70-million-a-year manufacturer of equipment for interfacing and controlling IT networks.

"If we had purchased separate systems to perform the same functions, the total cost would have been much higher than the PowerCerv suite. And supporting that many separate systems is complicated. Each system in a best-of-breed network needs its own resources. You need to have people trained on all those platforms. Then you have the issue of getting all those separate systems to talk to each other."

Keeping customers happy

Many mid-sized manufacturers are finding that some systems that claim to be integrated are too expensive, particularly systems that originally were built to run Fortune 1000 enterprises and now are being marketed as scaled-down, midrange solutions. Automata reviewed more than one such system before settling on ERP Plus, according to Sam Paisley, the company's CFO. "We concluded that

ERP Plus has bolstered Lorin Industries' customer-service efforts by facilitating communication between sales staff and the rest of the company. (*Photo courtesy Lorin Industries*)

Two applications, one look

APS solution adds greater value to ERP Plus

The advanced planning & scheduling (APS) system available with the latest version of its ERP Plus suite strengthens the value proposition that Tampa, Fla.-based PowerCerv Corp. offers mid-sized manufacturers: the ability to meet customer's expectations, while maintaining a single face to its customers.

APS software optimizes the use of in-house resources to ensure that all customer commitments are met at the lowest possible cost. Manufacturing professionals can make effective decisions while dealing with complex production constraints and an environment of continuous change. They can alter their mode of operation on-the-fly, in response to customer demands, as well as unforeseen circumstances such as machine downtime. An APS solution can help a manufacturer maintain its solid customer relationships and maximize its profit potential.

PowerCerv has partnered with Taylor Manufacturing Systems, Norcross, Ga., for its APS solution. Taylor is an industry leader in APS solutions with its multi-user, Window's-based TESS® software package, known for its real-time scheduling and planning capabilities in complex manufacturing environments.

Ursula Hess, president of Taylor, says TESS is designed primarily to optimize the planning and scheduling of plant resources—machines, materials, and labor—so companies can do the best possible job of executing short-term production schedules. "TESS is used by manufacturers of varying size, including some very large ones," she says. "Our alliance with PowerCerv allows us to bring our APS solutions to mid-sized manufacturers, whose planning and scheduling challenges can be no less complex than larger companies." She notes that manufacturers routinely see dramatic improvement in on-time delivery rates immediately after deploying the TESS system, combined with cost savings in production, which obviously wins favor with their customers.

John Montague, senior vice president of marketing for PowerCerv, says the company struck an alliance with Taylor after it conducted a thorough evaluation of many APS products on the market. PowerCerv selected TESS for its depth of functionality offered on an open, client/ server system that is easy to integrate with its ERP Plus software suite. One of the primary reasons for going with Tess is the ability that TESS provides to integrate with ERP Plus and help their mutual customers present a single face to their customers. The integration between the PowerCerv ERP Plus system and Taylor's TESS software was completed this past November, and eliminates the need for the customer to connect the two systems. Hess agrees that TESS will heartily support PowerCerv's goal and there are clear reasons why. First, says Hess, the TESS APS system will generate realistic

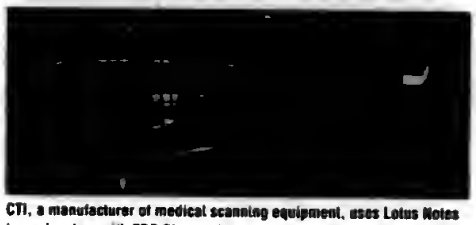
the amount of effort required to make those systems operational, including bringing in external consultants, eliminated them as an option for us," says Paisley, who believes ERP Plus will support all of Automata's key business goals at a reasonable cost.

Automata is a mid-sized manufacturer of printed wiring boards for many well-known computer and networking hardware manufacturers. Paisley says that Automata is experiencing rapid growth, but sustaining that growth will require maintaining strong customer relationships.

For Automata, that means staying abreast of customers' plans for building computing platforms, designing and manufacturing the right boards for those platforms, and ultimately being able to deliver large numbers of those boards, often on short notice. Paisley says Automata routinely is required to deliver orders within three to five days after they are placed.

"Maintaining long-term relationships with our customers has been critical to our success," Paisley says. "In looking for a new system, we wanted a sales force automation platform for managing customer contacts, but we also needed the end-to-end integration for customer support. We were seeking the type of integration that would allow us to take data generated as part of a sales quote and convert it into a schedule for building the requested products. We expected to use that same information to control the shop floor during production, to help execute the shipment of finished products, and provide post-sale customer support after products are delivered."

Mike Dumas, MIS manager for Automata, says ERP Plus will make Automata more efficient in every area, from sales quoting to management reporting, and he is confident that the system can be fully operational in less than six months.



CTI, a manufacturer of medical scanning equipment, uses Lotus Notes in conjunction with ERP Plus so that occasional users of ERP data have access to the system. *(Photo courtesy CTI)*

"Right now, we have multiple systems that don't communicate," Dumas says. "Our sales quoting process is extremely cumbersome, with sales reps bouncing back and forth between systems. They have to exit the MRP system, use Microsoft Excel to track pricing data, and Microsoft Word to produce the actual quote. With PowerCerv, they will be able to generate quotes completely on-line—including using the product configurator for pricing—and convert the quote into a sales order, all in the same package."

Dumas says Paisley and other Automata executives also will find ERP Plus much easier to use than Automata's current system, which will free the MIS staff from having to generate management reports. "Our current system has no report writer," he says. "Often when management wants a new report, we have to write a C program to create it. PowerCerv has a Windows-based report writer that makes things a lot easier, but it also has easy drill-down capabilities that will allow most managers to find the information they need without having to create a report."

A logical flow

The ERP Plus suite is designed to support the typical flow of business transactions, with the sales force automation and customer-support modules serving as gateways to the rest of the system. Montague says this structure is based on PowerCerv's belief that in any business, "Nothing happens until somebody sells something. Once the sale takes place, everyone else needs to be ready to spring into action."

Salespeople can manage entire customer relationships through a sales/marketing workbench within the sales force automation module. The workbench contains folders for logging and tracking all sales opportunities, as well as for recording any contacts—phone calls, meetings, etc.—that are scheduled or that have already taken place, with customers or prospects.

Salespeople also can use the workbench to create and track the results of sales campaigns. This feature can be employed over the Internet by building a link to the company's Web site, where prospective customers can respond to electronic questionnaires and have their answers transferred directly to the sales force automation database.

The customer support module has a similar workbench that can be used to monitor all contact with customers after an order has been placed. Users can customize either workbench to contain specific fields and buttons, including direct links to any of the other modules within the ERP Plus suite. Galloway says this sets ERP Plus apart from the competition.

production schedules that can be passed to the ERP Plus sales force automation module, allowing a company's sales and customer service representatives to give customers realistic due dates at the beginning of a sales cycle. "Companies that don't have APS software often don't have the information they need to give accurate delivery dates at the beginning of a new relationship," she says. "That's why they end up with so many late orders."

Another benefit of APS software, according to Hess, is to reduce lead times for building products, by effectively scheduling the coordination of all resources. "An overview of the production cycle is generated, allowing for adjustments to unexpected occurrences. Adjustments can be made in ways that minimize the impact on delivery schedules."

The second reason PowerCerv selected Taylor for its partnership for an APS solution was the fact that the TESS system was developed on the same software development toolset as PowerCerv's ERP Plus suite—PowerBuilder®. Montague says that having both systems on one common platform makes it very attractive for its mutual customers. "The biggest benefit to our customers is that we've integrated the TESS system with our ERP Plus system. The fact that they're both on the same platform is the icing on the cake for them. They don't have to learn another platform in order to use it. To them, it's like using one single product."

"Managing customer contacts and sales opportunities is a typical function for a sales force automation system," Galloway says. "But being able to use that same system to set customer expectations related to product configurations and pricing, or to provide available-to-promise information, is not."

"Pricing data comes from the distribution module and delivery date information comes from the APS and manufacturing modules, but salespeople conducting inquiries don't have to know that. For example, if they want to check inventory status, they click a button to launch an inquiry that pulls information from the inventory management component of the distribution module. Anyone else within a company can have this type of access to any part of the suite that management wants them to have."

Galloway says ERP Plus provides such smooth information flow because all of its components were built on the same development platform with a common set of programming methods. Among other things, Galloway says, these common development methods mean the front- and back-office applications employ identical user interfaces, further reinforcing the single-face-to-the-customer concept.

By contrast, most ERP vendors that advertise such end-to-end integration either have formed strategic alliances with front-office system suppliers or acquired a front-office system from another supplier. In either case, the ERP vendor must link systems that not only have different user interfaces, but different data models and underlying programming structures as well. The most popular way of providing such links is building middleware applications that act as message brokers that take data created in one format and translate it before delivering it to another environment. Yet, as Montague points out, middleware is complex and can fail to pass data from one point to the next, which can have dramatically negative results if a machine is shut down, delaying customer orders. "Mid-sized manufacturers have enough on their hands when implementing ERP systems," says Montague. "They don't need the added burden of maintaining an extra layer of middleware. With limited IT staffing, that's just not a wise burden for them to take on."

The benefits of workflow

The underlying workflow engine enhances the smooth flow of information within ERP Plus by allowing users of any system component to route information related to individual customers throughout the organization. Galloway says the workflow engine reduces the time business processes take. "Take the process of approving a credit memo. When the customer-service rep enters the request into the system, the workflow engine can fire off e-mail messages

Achieving perfection

ERP Plus software anchors premier powerboat business

In the world of high-performance powerboats, the name Fountain has special meaning.

"We are considered the Ferrari of powerboats," says Tony Romersa, chief operating officer for Washington, N.C.-based **Fountain Powerboat**. "Our customers pay a premium price for our boats and they have a right to expect everything to be perfect from the beginning."

The need to continue its tradition of meeting high customer expectations while simultaneously managing its own rapid internal growth recently drove Fountain Powerboat to select Tampa, Fla.-based **PowerCerv**'s ERP Plus enterprise resources planning (ERP) suite as its primary business computing system.

Romersa expects ERP Plus to not only help Fountain Powerboat retain its reputation as the premier manufacturer of 25- to 60-foot powerboats, but to extend that reputation into a new market when the company launches its first line of full-sized yachts later this year.

The decision to purchase a new computing platform stemmed from management's realization that the business, which celebrated its twentieth anniversary in 1998, had outgrown its current systems. But the selection of ERP Plus was the result of a unanimous vote of a system search committee that included both members of management and rank-and-file system users.

Fountain Powerboat currently has 375 employees and generates $50 million in annual revenue. Says Romersa, "We simply cannot get the information we need to run the company from a system that was installed when we had less than $10 million in annual revenues and fewer than 100 employees."

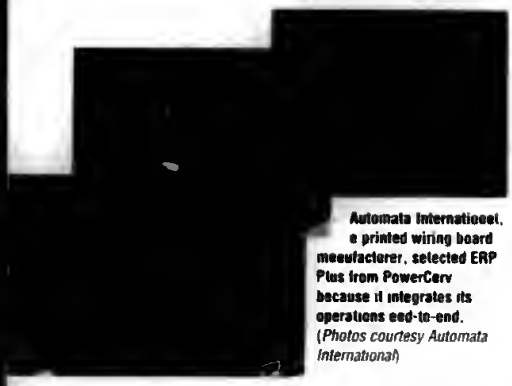
Joe Schemenauer, the company's chief financial officer who doubled as leader of the ERP system search committee, describes Fountain's current systems this way: "They have been pieced together over the years and, at this point, they represent everything that you don't want in a twenty-first century company."

The one piece that Fountain was not anxious to part with is a home-grown order management system that feeds order information taken from Fountain's dealers—including customer requests for special options—directly into its production scheduling system. That connection is essential for Fountain to make sure that all of its customers get exactly the boat they want on the date it has been promised to them by the dealer. That is why the tight integration between front- and back-office applications that ERP Plus provides appealed to Fountain's search committee. Another key selling point was the system's built-in product configurator, which will make it easier for order-entry people to not only verify whether certain options can be built, but to determine the cost of the options as well.

Important configurations

"We do have standard models," Schemenauer says, "but we also operate by an unwritten philosophy that we will do just about anything that a customer asks us to do with a boat. The problem with our current system is that it is very difficult to get timely cost data. In the PowerCerv system, all data is available in real time. That means we can determine the cost of options when orders are taken, set the selling price accordingly, and ensure we make money."

Other factors that contributed to Fountain's selection of ERP Plus, according to Schemenauer, include its consistent, user-friendly interfaces; and its open technology platform. Fountain will run ERP Plus on the Windows NT operating system with Microsoft's SQL Server as its primary database, a setup that Schemenauer says should make the system easy to install and maintain. In fact, Schemenauer expects the entire implementation process to take roughly three months, with the biggest challenge being getting users



Automata International, a printed wiring board manufacturer, selected ERP Plus from PowerCerv because it integrates its operations end-to-end. *(Photos courtesy Automata International)*

to everyone involved in that approval process. That allows people to be proactive in resolving customer issues."

Doug Haymes, PowerCerv's vice president of product management, points out how this quick flow of information can be important even in areas that normally are not associated with customer relations. "If someone in accounts receivable calls a customer about an open invoice, and finds out the customer is withholding payment because there was a problem with the product, they can make a note of that and, through the workflow engine, send that note directly to a customer support person. And just as important, the note remains in the accounts receivable files to prevent collections personnel from calling on that same invoice two days later and irritating the customer."

Easily adaptable

PowerCerv customers routinely express appreciation for how easily various components of the ERP Plus suite can be adapted to their specific needs.

CTI, a leading manufacturer of medical scanning equipment based in Knoxville, Tenn., has attached an existing Lotus Notes-based e-mail and workflow system as a front-end to the ERP Plus suite. This link is for users who occasionally need to view manufacturing data, but don't routinely use other parts of the system, such as product engineers who view existing bills of material when designing new products. Mary Lou DuBois, IT manager for the $75-million-a-year company, says the open technology on which the ERP Plus suite is built enabled CTI to create this custom application, which she ultimately expects to make available to all CTI employees, as well as selected suppliers, over the Internet.

Buckmaster says ERP Plus was technically ahead of all of the systems Interphase encountered, which makes him believe it will support Interphase's business not only now, but for the foreseeable future. "It was clear to us that PowerCerv's system is at the front-end of its life cycle, and that was important to us, because we are entering a period where we expect substantial growth over the next several years," Buckmaster says. "We also found most ERP vendors have very limited back-office support for sales force automation. They typically are interfacing their back-office systems with a third-party sales force automation package, or they have a dial-up mechanism that is not designed to support outside salespeople."

Buckmaster also was impressed with the design of ERP Plus, specifically its object orientation, which he says is the key to the consistent look that is displayed throughout the system. "Our users also noticed that the data flowed through the system in a logical fashion," Buckmaster says. "If they entered data in one place, and expected to see it in a certain place down the line, it would be there."

DuBois says ERP Plus has had a profound impact at CTI since it went live at its Knoxville headquarters last October. It currently is being used to organize the financial reporting of the four business units that comprise CTI, and to coordinate purchasing, including the procurement of services from contract manufacturers that produce subassemblies for CTI's products. DuBois says ERP Plus is fostering camaraderie within CTI's work force. "Because they now have a better overview of how the business really flows, people are more appreciative of what each department does." Which, incidentally, is the first requirement for any company that wants to show a single face its customers. ■

who have been working on character-based terminals accustomed to the graphic-oriented Windows interfaces.

A manager's dream

From a management standpoint, Romersa likes everything about ERP Plus—including its price. "I came to Fountain Powerboat from a $4-billion company with 40 people in its MIS department at the corporate level alone, and this system is giving us basically everything we had there, but at a much lower cost. It will allow us to maintain a small, tightly knit MIS staff while also providing the information we need to effectively run the business."

Photo courtesy Fountain Powerboat

Romersa is especially enamored of the ease with which he and his operating managers will be able to extract information from the system. "Right now, our management reports consist of hard-copy printouts because it is difficult to get information out of the system," he says. "The major problem with that is the timeliness of the data. Managers are getting production status reports at the end of the week, which means it's already too late to take corrective action if something has gone wrong during the week. With the new system, we will be able look at status reports on-line, in real time, and then drill down and see exactly what is happening at that moment."

With ERP Plus anchoring its business, Fountain Powerboat should stay clear of troubled waters.

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CTI, Inc.

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ment homes and services industries can get a big boost from the Web if they start targeting seniors. Expect to see more products targeted at the elderly, like Bausch & Lomb's "screen magnifier" — a giant magnifying glass that fits over your computer screen.

Seniors also will influence Web-page design. They want simple, easy-to-understand information, Berger says — and that means simple, easy-to-understand presentation.

Too many Web pages are cluttered and overwhelming. The AARP's site, by contrast, is easy on the eyes.

So don't get hung up on youthful glitz. The real Web generation isn't the teens and twentysomethings.

It's the parents of the baby boomers. ◗

DAVID MOSCHELLA

Technology is increasing privacy, not threatening it

EVER SINCE the Internet became a mass-market phenomenon, it seems that scarcely a week goes by without some sort of story warning about how the Web poses grave risks to individual privacy. Yet, as far as I can recall, I haven't seen a single media report that has emphasized a much more fundamental point: 20th century technology has greatly increased individual privacy, and only rarely diminished it. I suspect this will hold true for the 21st century as well.

DAVID MOSCHELLA is an author, independent consultant and weekly columnist for *Computerworld*. Contact him at dmoschella@earthlink.net.

People tend to idealize the past, especially when it comes to privacy.

But let's revisit small-town America, a place where multiple generations often lived under the same roof; where everyone knew who was home at night and who was down at the local bar; where people shopped at the same stores, worked in the same companies, went to the same churches and doctors and used the same lawyers. Just about everything someone did, bought or said helped feed into the local gossip stream. Technology is the single biggest reason this has changed.

How many places are more private than one's own automobile? Similarly, except for our still-immature cell-phone technology, aren't we generally more confident that telephone conversations are less likely to be overheard than face-to-face ones?

Nobody knows what TV programs we're watching or music we're listening to. Indeed, if anything, you could argue that perhaps we have *too much* privacy. Is there a simpler way to explain why so many of us behave so badly?

Computers are extending this trend, not reversing it. E-mail and voice mail let many of us work without others having any idea where we are. Asynchrooous and mobile technologies are breaking down the very idea of a fixed office, with all its oversight, intrusion and conformity.

More important, the Web offers a truly historic expansion of privacy in matters of health, religion, sexuality, politics, finance and other sensitive areas. Encryption eventually will take us to an even more secure level.

Don't get me wrong: There are certainly plenty of legitimate risks. Credit-card information, cookies, registration information and similar Web-usage data can all be seriously abused.

We should be thankful that watchdog groups voluntarily stay on top of the situation and push Intel to be smarter about serial numbers and embarrass GeoCities for not respecting the confidentiality of its customer information. It's simply naive to think that pure industry self-regulation won't result in some significant abuses.

But none of this justifies the ongoing sense of negativism.

The mainstream media, and some of the privacy watchdogs themselves, appear to operate under the assumption that computers are fundamentally dangerous and need to be carefully controlled.

This is ironic because the biggest threat to privacy isn't computers at all, but the very media that complain about them so much. The same newspapers and TV networks that love to scare us about the Web don't think twice about splashing intimate personal information all around the world.

Of course, scaremongering does make for some excellent books and movies. We can all enjoy George Orwell's *1984* or last year's film, *Enemy of the State*. And it's probably good for us to occasionally revisit that nightmarish world where computers record every transaction and satellites track every movement.

But don't confuse this with reality. The more pervasive technology becomes, the more privacy we will enjoy.

Thus it has been, and thus it shall prove to be again. ◗

READERS' LETTERS

Bowie, not McNealy, the real IT visionary

IN YOUR "The Next Decade" feature [CW, Jan. 4], Scott McNealy opines: "There's no such thing as a personal computer in the future." My main "appliance" at home is a professional audio recording system. The current version of my software can (theoretically) run 96 tracks of 96-KHz, 24-bit audio with eight effect plug-ins per track. My trusty old 450-MHz Pentium II isn't even close to handling this kind of throughput. Maybe a quad Pentium V system running at 2 GHz could be up to the task.

Yet Mr. McNealy claims that soon, my home computer box will be a thing of the past. I plug in some cable to my screen, swipe my credit card and presto, this kind of horsepower and bandwidth is at my fingertips (and for under $500 a year). I am very curious to know how he proposes to do that. A mainframe server on every street corner with a fist-size bundle of fiber going into every home? I think I'll bank on my PC a while longer.

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UNSURPRISINGLY, only David Bowie out of the 20 "visionaries" selected ["The Next Decade," CW, Jan. 4] even thought of how future changes in the uses of computers will impact the way we live our lives.

Internet access is a wonderful thing, but if it increases the chasm between the haves and the have-nots, then there is a definite downside. As to the erosion of parental authority, which computer illiteracy creates, I can't think how if can be a greater source of division than the Vietnam War was to us baby boomers.

Besides, more and more jobs entail computer literacy. Even my math-phobic, blue-collar boyfriend finds himself reluctantly in front of a terminal punching in his credit-card receipts from the hospital he works at as a mechanic.

Marianne G. C. Seggerman
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Military does help IT job seekers

IN THE Nov. 30 *Computerworld* article, "Site Targets Ex-military Personnel for IT Jobs," the next-to-last paragraph states "the government doesn't allow companies to recruit on military bases, and it doesn't host job fairs for people returning to civilian life." In fact, the opposite is true. The Army has a Career and Alumni Program, which arranges and hosts regular job fairs.

I must also take exception to the statement attributed to Lisa Clavey of Sears, Roebuck and Co. that "most technical workers coming out of the military probably couldn't step right into IT jobs." I hope she means technical workers who have no IT experience, because IT work . . . in the military is no different than in the private sector.

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COMPUTERWORLD welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931. Internet: letters@computerworld.com. Please include an address and phone number.

JOHN GANTZ

Internet2 is on the way: Watch for it

WHILE WE MANAGE our businesses' technology infrastructure, scientists and students at more than 100 universities and scores of companies are working on a new version of the Internet. It goes by several names — Internet2, Next Generation Internet or Abilene — depending on which group of universities and companies is testing what. But at its essence is a flurry of experimentation with new protocols and higher speeds. Much higher speeds.

Most of the experimentation is being coordinated by a consortium of universities and companies called the University Corporation for Advanced Internet Development (UCAID). Many of the experiments connect to the National Science Foundation's very high-performance Backbone Network Service, managed by MCI WorldCom, which runs today at 622M bit/sec. but soon will be running faster than 2G bit/sec. Several gigaPOPs — high-speed points of presence for access to Internet2 — are in operation at universities that offer 622M bit/sec. access to customer end points; at least one metropolitan area's fiber network in the experiments is already running at 2.488G bit/sec.

JOHN GANTZ is a senior vice president at International Data Corp. in Framingham, Mass. Contact him at [illegible]

Although it's not officially part of the Internet2 or UCAID experimentation, another development, Project Oxygen, also will affect the performance of Internet2. The project is a global undersea fiber cable network with 99 landing points in 78 countries that is planned to have a *minimum* throughput of 1.28T bit/sec. The engineering began last fall and completion of the first phase of the network is slated for 2003. More than 80 carriers have promised to invest in the network.

Originally, Internet2 was mostly concerned with testing the next version of the Internet Protocol (IPv6) and finding new ways to route broadcast messages. But now the most intense focus seems to be on developing protocols for permitting different quality-of-service levels. These two areas, along with the prospect of much higher speeds in the network, portend a lot of change for managers of corporate networks and commercial Web sites.

Sometime after 2000, we'll have Internet options that rival leased-line and virtual private networks for reliability and security as well as oodles more bandwidth. The new protocols mean that we can guarantee the level of service needed for the various parts of our networks; they also mean we can distribute video, audio and data signals in broadcast fashion in ways we can't today. With Internet2, much of the distinction between LANs and WANs will go away, voice over IP will become a viable option for corporate voice networks, Web sites will be orders of magnitude more interactive without hurting the visitor's experience and videoconferencing will become more than a niche application.

Add in some new network management tools, directory services and perhaps even technologies such as Sun's Jini networked-device autoconnection scheme and the idea of thin-client computing may come back to life, with the network handling data and content storage, intermediate servers handling application logic and client devices handling complex user interfaces, applet management and caching and background tasks such as encryption and compression.

In short, the very infrastructure of computing could change, which would make many of our specific technical skills — such as LAN troubleshooting — obsolete and some of our generic management skills — such as managing change — critical. See you around cyberspace2.

ATUL SUDHALKAR

Open Windows to end the Microsoft legal problem

LET'S SAY Judge Thomas Penfield Jackson rules that Bill Gates and company have been bad boys and need to mend their ways — a likely outcome of the federal trial now under way. Microsoft surely will challenge that ruling, and its success on appeal will depend both on the nature of the sanctions and on Jackson's logic. Both must be carefully designed to maximize competition while minimally infringing on Microsoft's property rights. If Jackson merely rules that Windows is the dominant software platform, that would be impossible to refute. And if the sanctions he imposes are designed solely to limit the power Microsoft wields due to that monopoly, no appellate court could overturn them.

ATUL SUDHALKAR is senior software engineer at Trada Ltd. in Atlanta. Contact him at [illegible]

Here's a simple, effective, easily complied with, easily monitored and minimally controversial way to do this: Require Microsoft to publish the source code for its operating systems and forbid it from requiring vendors to ship its applications — free or not — with the operating system.

The solution is simple yet has many strengths:

1. It wouldn't require Microsoft to give up copyright or royalties. A trade secret would be revealed, but since that would preclude only anticompetitive activities, Microsoft couldn't cite that as a barm without implicitly confessing to a crime.

2. The sanctions fall neatly within judicial precedent because it's similar to requiring the Baby Bells to give all long-distance providers equal access to local lines — a judicial mandate 20 years ago on the regional Bell companies that has stood the test of time.

In fact, Microsoft would be getting off easy by comparison because it wouldn't be barred from selling applications software; the Baby Bells are barred from providing their own long-distance services.

3. Microsoft and the government have vehemently disagreed about the distinction between browser and operating system. But why argue?

Let Microsoft decide. If it expands the operating system it must publish more source code; if it shrinks the operating system it can bundle less software. Let Microsoft decide which course is wisest for each potential operating system extension or bundle.

4. The sanctions would be ridiculously easy to monitor. If Microsoft's applications run better on Microsoft-supplied versions of Windows than on independently compiled versions, Microsoft is demonstrably out of compliance.

5. Microsoft would benefit, too. Tougher sanctions would tempt it to appeal because it would simultaneously have more to gain and be more likely to succeed.

Win or lose, it would tie up Microsoft in years of costly litigation, with the government forever spying on its activities. But with my proposed sanctions, Microsoft might just accept the judgment and put its focus back on its core business. It would surely be better off.

6. The Linux experience shows that open-source code leads to quicker bug fixes and more reliable software. That would surely benefit consumers and Microsoft alike.

7. Above all, this is the one solution that leaves Microsoft strong but defanged and lets everybody compete equally for the applications market. The benefits to consumers would be simply awesome.

The other sanctions reportedly being considered by the Justice Department appear clumsy, draconian, unenforceable or vindictive. For instance, ordering Microsoft to desist from anticompetitive behavior would be pointless; enforcing it would be more troublesome than effective.

Breaking up Microsoft surely is overkill, and one can almost sympathize with Microsoft appealing such a sanction. Requiring Microsoft to share its source code with "two or three" other application software developers, as recently reported in *The Washington Post*, is silly. Which three? Who would choose? What would keep these few from collaborating? Why bother?

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BUSINESS

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Supply-chain planning software can pay off fast once companies manage to install it. Less outlay for inventory and better production planning are among the benefits. ▸ 43

PRIVY TO PORTALS

Promoting your Web site on a portal like Lycos or Excite can drive traffic and beef up brand awareness. But it's not cheap and it's a lot of work because you must analyze effectiveness and refresh promotions often. ▸ 44

RE-BREAKING CODE

Programmers introduce new Y2K problems in code every day — even in code that's beeo fixed. Some IT groups make retesting mandatory, even for applications that have been repaired. ▸ 41

RUN ON THE BANKS?

Year 2000-savvy companies survey customers to see just how alarmed they are about systems failures at the date rollover. Banks plan in case of a rush on ATMs, while other industries reassure customers that it will be all systems go on New Year's Day. ▸ 40

Y2K NETWORKS

Even if your apps are compliant, 30% of your routers and switches are not. ▸ 40

CONTRACTORS CONTINUING?

Many companies are trying to reduce the number of contractors they use. But Y2K and other work strains tbe staff, so "leased workers" are cropping up at companies that want to avoid contractors or oew hires. ▸ 55

PARADISE FOUND

IT jobs in tropical locales or natiooal parks are great — but they require the same long days and stress as life in tbe mainstream. Still, a beach just meters away sure doesn't burt morale. ▸ 56

QUALITY ASSURANCE

Technology can help maintain complex quality assurance requiremeots like those kosher food makers face. But for some processes, automation is simply inappropriate. ▸ 43

MILLENNIAL ETIQUETTE

Technologists aren't total boors, but communicating via computer all the time can push social graces to the background. Even online, manners really do count. ▸ 58

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COLUMBIA ENERGY S Er Singleton, left, and Paul Hoedeman of Home Depot

INDUSTRIES TEAM ON PROJECT APP

Home Depot and Columbia Energy — very different companies from very different industries — teamed up to build a flexible, effective project management application that reflects both their points of view. And by combining varied technical strengths, they were able to do it themselves, deepening their own in-house experience, not a vendor's.

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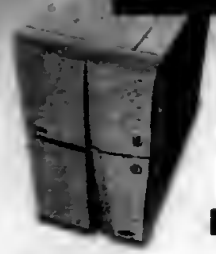

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IN THE SHADOW OF Y2K: PREVENTING PANIC

Companies go on offensive to reassure their customers of service

BY THOMAS HOFFMAN

SURE, YOU'RE confident your organization will be ready for year 2000. But convincing customers who've been scared silly by doomsday reports is a whole different matter.

Many companies are reacting to such concerns. Others, from banks to utilities, have launched offensives to see just how alarmed their customers are and to reassure them that it will be all systems go next New Year's Day.

Canadian Imperial Bank of Commerce, for instance, is surveying customers to determine if they're "ill-informed" or "panicked" about year 2000, said John Burns, a vice president at the Toronto bank.

The bank wants to figure out if depositors plan to withdraw significant portions of their savings toward year's end so it can decide how mucb cash to stock in its automated teller machines during the latter part of December.

CANADIAN IMPERIAL BANK'S John Burns says the bank is surveying accounts to see how much cash it needs to have in its ATMs at year's end

"There are going to be [year 2000-related] disruptions, but not catastrophic outages. But public reactioo could be worse than that," Burns said.

KeySpan Energy has received roughly 500 inquiries about its year 2000-readiness since 1997, primarily from its commercial customers.

The Brooklyn, N.Y.-based gas and electric utility is answering all customer ioquiries with a letter detailing its millennium program. Utility representatives are even appearing on cable TV to let customers know energy will be geoerated and delivered during the winter months of next year, said Rick Siegel, vice president of technology operations at KeySpan io Hicksville, N.Y.

Later this month, KeySpan will sponsor a workshop for commercial customers at a Long Island country club to present its year 2000 program along with Bell Atlantic Corp., the Long Island Rail Road and other infrastructure providers.

"It's become the fashioo to get these infrastructure providers to present [their year 2000 status reports] to their interested audiences," Siegel said.

Even the retail sector has had plenty of activity. Sears, Roebuck and Co. has fielded about 1,200 inquiries about the year 2000 compliance of a variety of products it sells — everything from programmable thermostats to VCRs.

Sears instructs its call ceoter ageots to forward those questions to Dennis Grummer, head of the retailer's year 2000 project office at its Hoffman Estates, Ill., headquarters.

All Questions Answered

Grummer and his staff respond in writing to each request with information about the year 2000 status of the product in question and the retailer's overall millennium project. "Electric drills and vacuum cleaners are pretty much no-brainers," Grummer chuckled.

For the airline industry, New Year's is one of the busiest travel times, and travelers' fears are well-known.

United Air Lines has given its reservatioo agents a short, blanket statement to read to customers in case they ask. Reservation ageots "doo't get into a lot of detail because it's not their jobs," said a spokeswoman for the Chicago-based airline, but they do tell customers that their planes will be flying and problems areo't expected.

Failure May Lurk in Your Network Devices

Y2K audits don't always find every glitch

BY STACY COLLETT

A global bank in Chicago completed its year 2000 system audits last summer. But several months later, an audit on the network showed serious problems with its router configurations.

"It could've taken down multiple levels of the bank because this was a higher-level router that was part of their global LAN infrastructure," said Robert Schell, presideot of Avico Inc., the systems integrator that performed the audit.

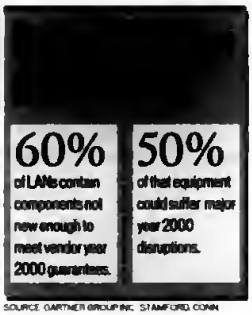
Just when you thought it was safe to enter the next ceotury, disaster could be lurking in your network system. So you think your routers and switches don't have date-change requirements, or they've already been checked? Industry watchers say check again.

According to research firm Gartner Group Inc., hidden third-party hardware and software, like router blades in LAN hubs and firewalls in routers, can have internal date dependencies, which can lead to total failure. (For technical details, see story on page 67.)

"Infrastructure is usually overlooked," said Edward Hunter, president of Downtime Inc., a Brunswick, Maine-based systems integrator that does year 2000 infrastructure work. "But any managed device is at risk — anything that's [Simple Network Management Protocol] aware."

Avico, in Northbrook, Ill., ran year 2000 audits for 30 of its clients using a network audit and design software product from NetSuite Development Corp., based in Concord, Mass. All 30 companies found year 2000 problems io their infrastructure — half of them in spots the companies already had analyzed for year 2000 compliance.

Stamford, Conn.-based Gartoer Group also estimated that 60% of LANs that haven't been specifically upgraded to be year 2000-compliant will contain components that aren't new enough to meet vendor year 2000 guarantees. About half of that equipment will suffer disruption on Jan. 1, 2000, the consultancy said.



SOURCE: GARTNER GROUP INC., STAMFORD, CONN.

Gartner alerted its clients last May to the potential danger of year 2000 glitches in infrastructure, but many are in denial. "Half the people figured it out nine months ago and are doing something about it. The other half are sticking their heads in the sand," said Neil Rickard, a Gartner analyst. Those who ignore their infrastructure face a serious threat, he said. "On Jan. 1, your applications are compliant, but you can't reach any of them."

SNAPSHOT

Competitor Comparison

What the nation's top package delivery companies say about their year 2000 work:

	UPS	FEDERAL EXPRESS
Fortune 500 rank*	52	134
Spending through third quarter of 1998	$37M**	$80M**
Estimate of total year 2000 cost	$102M	$150M***

* As of April 27, 1998 — UPS figure through Sept. 30, 1998; FedEx figure through Aug. 31, 1998
** Includes $14M in capital expenditures for new equipment
*** Includes $14M in capital expenditures for new equipment

SOURCE: COMPANIES' Q3 1998 10-Q FILINGS WITH SECURITIES AND EXCHANGE COMMISSION

KEEP YOUR CODE CLEAN

It's easy for careless users or programmers to reinfect cleaned-up systems. Here's how to ensure the Y2K bug doesn't return

BY DEBORAH RADCLIFF

YOU'VE FIXED your year 2000 problem and everything's going smoothly. Then it happens: Payroll shuts down. Or worse, your accounts receivable software can't process invoices.

Postremediation hiccups like these are every year 2000 manager's nightmare. The question is: Once you've cleaned your code, how do you keep it clean?

David Kelble, year 2000 project manager at the convenience store chain Wawa Inc. in Wawa, Pa., is wrestling with that problem. "I want to make sure all the work we did stays fixed," says Kelble, whose team has already remediated, tested and returned to production 2.2 million lines of code at a cost of $4.5 million.

As most shops complete their postremediation testing, there's a small but significant chance that the code they fixed won't stay fixed.

"Of our client companies that have completed remediation and testing, about 6% experienced code degradation through normal use and maintenance," notes Sheila Green, senior analyst at Cutter Information Corp., a consulting firm in Arlington, Mass.

Normal operating system upgrades, user installations of noncompliant or old software versions, Internet downloads or maintenance workers summoned from their beds at midnight to make repairs — any of these can potentially damage scrubbed code, according to Chuck Aquilina, year 2000 director at the information technology consulting firm Keane Inc. in Boston.

Retesting is Key

That's why Kelble doesn't plan to disassemble his year 2000 testing lab soon.

"Any time programmers make changes to the code — even before they make changes — my seven IS managers have the option to bring that code in the lab and run it through our date machine," he says.

Kelble gives those managers a strong incentive to retest: Each one bears responsibility if his code group fails. But other IT managers say retesting should be mandatory.

"On our core [online transaction processing] machines, no programming goes into production until it's gone through development, applications and acceptance testing," says Ed Leard, IT manager at Yamaha Corporation of America, a supplier of musical instruments and electronics in Buena Park, Calif.

Retesting is one way to prevent code contamination. Other year 2000 managers plan to freeze their fixed code. Others will allow only high-priority changes. Still others will build in stronger change management and process controls, according to Aquilina.

It all boils down to good processes, says Mary Fullerton, year 2000 project director at NBC, the broadcasting giant.

Fullerton says her biggest worry is about trading data with NBC's partners, such as ratings firm Nielsen Media Research Inc. or parent General Electric Co. She's counting on a "read-only" program that accepts and translates date-field format variances from each end of the transaction without altering any date-field code.

Upkeep Never Ends

But Fullerton strongly objects to freezing normal system work after remediation. The need for repairs, operating-system upgrades and even year 2000 vendor patch upgrades doesn't magically cease at the onset of the millennium.

Other project managers echo Fullerton's conviction. Most plan very short lockdowns (up to one fiscal quarter) to ensure everything works in a production environment before making any system changes.

Barring new code freezes, year 2000 managers strongly advocate change management or configuration management and version control to help keep code clean. That's easier said than done, especially on geographically dispersed user desktops and laptops.

"A lot of users have [data based on] old code at home, and they give it to their administrators. Without configuration management, old copies can slip into the desktop [that way]," Aquilina says.

Stories like these make Yamaha's centralized computing environments look downright appealing.

"We maintain much of our client pieces on the [Citrix Systems Inc. and Novell Inc.] file/application servers," Leard says of his 1,000 workstations.

> Of our client companies that have completed remediation and testing, about 6% experienced code degradation through normal use and maintenance.
>
> SHEILA GREEN, SENIOR ANALYST, CUTTER INFORMATION CORP.

"The pieces that remain on the client are pretty harmless to the core business application."

Even so, he adds, it's difficult to keep track of user changes. He's now searching for audit and tracking software that will alert him to desktop configuration changes. And he's developing a "Year 2000 Do's and Don'ts" advisory to distribute to users over the corporate intranet.

"This [recontamination] isn't going to stop at the crossing of the year," adds Wawa's Kelble. "Certainly in 2002, when a programmer writes a program and slips back to using only two-digit years, the system will go back a couple years and then blow up."

Radcliff is a freelance writer in Northern California. You can contact her at DeRad@aol.com.

Advice From Y2K Project Managers

Testing network upgrades or any other code changes is key to making sure cleaned code stays clean. When retesting for contamination, do the following:

- Start with a benchmark, either the results of an independent auditor's test or a mirror-image backup of your compliant system, says Rich Ormond, president, chairman and CEO of Matridigm Corp., an independent year 2000 verification firm in San Jose, Calif.
- Next, run any postremediation code changes against this benchmark to ensure none of the previously cleaned date fields have been affected, Ormond adds.
- Use various test scenarios, such as date acceleration, platform variances, leap years, additions and subtractions. Test these changes across all key systems – databases, operating systems and applications running simultaneously, advises Ed Leard, IT manager at Yamaha.
- Test off-line in a lab environment so you don't disrupt business, says David Kelble, Wawa's year 2000 project manager.

Auto Makers Laud Y2K Contingency Classes

BY BOB WALLACE

The Automotive Industry Action Group (AIAG) has developed contingency-planning classes designed to make sure the road to year 2000 compliance isn't a highway to hell for car-parts suppliers.

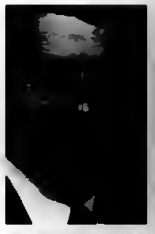
The group last week held the first of its classes, which are available via satellite in 10 U.S. and Canadian cities. The classes are targeted at the lower levels of the auto industry supply chain: the tens of thousands of small and midsize suppliers.

Suppliers receive tips in the classes on how to create contingency plans — if they haven't already — and are given examples of situations they may have overlooked, like losing electricity at a plant.

"The goal of the classes is to make sure nothing has been forgotten in 1999," said Fred Craig, the AIAG's year 2000 manager.

The group did a mass-mailing to suppliers to alert them to the classes. They are the industry's latest effort to address the year 2000 problem, which is especially relevant because the auto supply chain comprises multiple tiers of suppliers.

The classes "are an excellent step when done in parallel with the supplier's own contingency planning and risk assessments," said Lou Marcoccio, year 2000 research director at Gartner Group Inc. in Stamford, Conn.



AIAG'S FRED CRAIG: "Make sure nothing has been forgotten"

Last year, General Motors Corp. and premerger Chrysler Corp. began demanding contingency plans from the AIAG [CW, July 27]. Ford Motor Co. said it's also considering taking that step.

Automakers see great value in the AIAG classes. "We've mounted an industrywide global supplier readiness program, but in spite of our best efforts, there will be problems that will occur and potential supply-chain interruptions," said Bob Booth, executive director of year 2000 supply-chain readiness at GM. He called the classes "an essential element in Y2K readiness."

At Ford, a spokesman said: "We think it helps expose suppliers to the thought that having [a contingency plan] makes good business sense. The classes are a tool they can use to make sure that everything is accounted for."

For some, stockpiling parts may be all or part of their contingency plan, Craig said. Suppliers also have to worry about things such as security-card readers locking out workers and issues beyond their control such as employees having problems with mass-transit systems.

The one-day classes will be held again on March 9 and March 30 and cost $695 per person.

SUPPLY-CHAIN PLANS PAY OFF

After clearing early ERP hurdles, benefits start to flow

BY CRAIG STEDMAN

FOR SOME manufacturers, supply-chain planning tools help change the way they operate and quickly produce tangible business benefits.

Getting ready to use the planning software isn't as easy as snapping your fingers, of course. Most users start by installing an enterprise resource planning (ERP) system that can feed data to supply-chain tools.

Others spend months tying the tools to their stand-alone mainframe applications [CW, Feb. 22]. But once they got past those hurdles, several users said, their companies rapidly began to see improvements in the form of inventory reductions and more sophisticated production planning.

For example, Dirona SA, a $130 million maker of truck axles and brakes in Monterrey, Mexico, began using Thru-Put Technologies Inc.'s supply-chain software last June. Six months later, the software had helped chop Dirona's year-end inventories of raw materials and unsold products by $2.7 million — a reduction of about 20%.

Those kinds of savings should give Dirona a payback on its supply-chain investment in less than two years, said Manuel Valdes, materials manager at the company, which is using the Thru-Put tools with ERP software from Systems Software Associates Inc.

Even more important, Valdes added, better production scheduling has enabled Dirona to increase its rate of filling orders on time from 85% or less to 100% in some cases. "You can never underestimate what better delivery rates mean for you" with customers, he said.

Moore Corp. is seeing similar fast results from the SynQuest Inc. planning software it began using at two U.S. plants in December, said Thomas Gottfreid, project director for manufacturing execution systems at the maker of printed business forms and other products in Lake Forest, Ill.

For example, Moore's plant in Angola, Ind., missed four shifts in early January because of a snowstorm that closed roads in that state.

In the past, the plant would have had to operate on Saturday to make up for the lost time. It was able to avoid that by using the planning software to better synchronize the different steps in the manufacturing process and schedule production runs "down to the minute," Gottfreid said. "Before, we didn't have that level of sophistication."

Cigarette maker Philip Morris USA has used supply-chain planning software sold by Aspen Technology Inc. for nearly three years. The planning tools are helping Philip Morris reduce inventory costs and keep its manufacturing lines from sitting idle, said Jamil Wakilpoor, systems manager at the company's Richmond, Va.-based plant.

The supply-chain rollout was a follow-on to a 1995 installation of SAP AG's R/3 ERP applications. Having R/3 in place "improved the quality of data that we have at the corporate level" to feed to the planning tool, Wakilpoor said.

"But I still think it would have been better to do the planning side first," he added. "We didn't get all the benefits we wanted from the ERP system until we put in the planning software."

MORE ONLINE

For supply-chain resources such as articles, organizations, journals and books, visit our Web site.
www.computerworld.com/more

Doc Management Keeps It Kosher

Food manufacturers find IT helps them follow rules

BY ROBERTA FUSARO

Food makers face a slim margin of error when it comes to assuring the quality and content of their products. For some, document-management systems may help keep complex certification on track.

For example, Hunt-Wesson Corp. is using Web-based document-management technology to help keep its production process in line with the rabbinical instructions necessary to certify some of its products as kosher.

Fullerton, Calif.-based Hunt-Wesson — the parent company of Orville Redenbacher/Swiss Miss Foods Co. and Wesson/Peter Pan Foods Co., among others — currently uses the Docs Open document routing and archiving system from PC Docs/Fulcrum Technologies in Toronto to collect the ingredient lists and other documents that indicate compliance with Jewish dietary laws. It plans to upgrade to the company's Web version this year.

If there's a glitch in that process, "a local rabbinical authority can move to have [products] withdrawn from the market. They can also inform clientele that the product isn't kosher and that they shouldn't buy it," said Britt Nichols, a quality assurance manager at Hunt-Wesson. Inaccurate labeling could also lead to lawsuits, he said.

But other food companies, like Best's Kosher, can't count on information technology to ease the certification process: Jewish law requires that rabbis be on a meat producer's site at all times to ensure kosher certification.

"There are many more risk factors in koshering meat than there are in producing something like crackers or soup," said Will Oscherwitz, president of manufacturing at Best's Kosher, a subsidiary of Sara Lee Corp. Rabbis mark the animals by hand to track them. It's not a process they could even consider observing on videotape, Oscherwitz said.

"The food-manufacturing industry, and the koshering process in particular, are extremely complex," said Hadley Reynolds, a research manager at The Delphi Group in Boston. Document-management systems can route status information and process approvals to help maintain consistent production of not only food, but also of drugs and chemicals, he said.

Because little-known herbs are the key ingredient in its throat lozenges, Ricola U.S.A. uses a homegrown document-management application to track the herb-to-extract manufacturing process taking place at sites in Switzerland and the U.S.

"We use inconsistent raw material to create a consistent product," said quality assurance manager Jean Clark. Teams pass a lot of E-mail and electronic documents to ensure standards are being met. "If everything were done manually, it would be too cumbersome," she said.

How does Newport News Catalog predict buying habits for millions of customers?

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WEB MOVES ADD SPANISH CONTENT

Interest in online ventures grows in Latin America, though market is still young

BY JUAN CARLOS PEREZ
FORT LAUDERDALE FLA

COMPANIES IN Latin America are increasing their use of the Internet, lured by the hike in efficiency and productivity that can result from extending their businesses to the Web, according to an IBM official.

IBM alone handled between 400 and 500 Internet-related projects in Latin America in 1997, and that figure rose to between 1,200 and 1,400 projects in 1998, said Tony Rummans, vice president of the E-business Solutions division for IBM in Latin America.

Still, there's not enough interesting information for Latin American users on the Internet, a situation that, in addition to technical reasons and price, is keeping many people offline, according to Boston-based Yankee Group Inc. In a teleconference last week, analyst Carlos Guzman-Perry said efforts to provide content that is pertinent to Latin Americans from companies like Yahoo Inc. and StarMedia Inc. has helped the situation somewhat. There are about 3 millioo Iotemet users in Latin America, he said. In cootrast, the U.S. has about 63 million users, according to Jupiter Communications in New York.

Nonetheless, the potential of the Internet spurred the founders of tiny Flowernet SA de CV to launch an online store in January, though none had any experience in the flower business, said Marina Cardoso Aleman, the company's operations director. They wanted to catch the rising wave of electronic commerce in Mexico, the country with the region's second-largest informatioo technology market, Aleman said. "Sales over the Iotemet are growing, and it's good to get in now," she said. "Being among the first is always the best thing." The site is *www.floresflowernet.com.mx/*.

> Sales over the Internet are growing, and it's good to get in now.
>
> MARINA CARDOSO ALEMAN, FLOWERNET

Buying over the Internet is extremely convenient in a big and crowded place like Mexico City, where people work long hours and traffic is a serious problem, she said. "If you want to buy a rose for your girlfriend, it's going to take you two hours to do it," Aleman said.

Rummans said the continued improvement of the telecommunications infrastructure in many countries and the liberalizatioo of telecommunications markets throughout the region have helped drive companies online in the past year.

And having a common language — Spanish — throughout most of the continent may make it easier for retailers to do business beyond their countries' borders, although most are still focusing on their local markets, Rummans said.

Perez writes for the IDG News Service in Latin America.

Should My Company Care About Portals?

High-traffic sites full of potential buyers

BY SHARON MACHLIS

Recent mergers and acquisitions of Internet portals is one of the most closely watched categories on Wall Street and one of the hottest strategies for online businesses.

Recent deals include the proposed USA Networks Inc. acquisition of Lycos Inc. and @Home Corp.'s purchase of Excite Inc. With all that investor attention, many in the Web industry wonder what role portals can play for them in delivering customer traffic and dollars. **The following FAQ** offers some answers:

Why all the commotion about Internet portals?

On the consumer side, portals are among the most heavily visited sites on the Internet. For example, an estimated 47.3% of all Internet surfers visited Yahoo.com at least once in the past month, according to the Media Metrix Inc. Web-ratings agency.

As more newcomers come online, more Web sites compete for business, making it more difficult and expensive to attract customers. A popular portal is one place to find a lot of potential new surfers.

On the business side, lots of manufacturers are teaming up to offer one-stop shopping oo the Web to their business customers. From steel to chemicals to agricultural equipment, industry-specific portals are springing up to make purchasing more efficient and convenient.

How important is it for Web retailers to have a deal with a top portal?

That depends. If you're also a brick-and-mortar retailer with a well-established brand name

SOURCE: MEDIA METRIX INC., NEW YORK, DECEMBER 1998

and advertising in the physical world, you can use portals to help drive traffic to your Web site — not your online rivals.

If you're trying to attract new customers on the Web, a portal may be a good place to promote brand awareness. But it can be expensive, with exclusive or semi-exclusive deals often running into the millions of dollars.

What else do you have to do?

Those who do major portal deals say they have to come up with frequent new promotions and constantly analyze data to see what banners and placements are the most effective. Some retailers may also want to try structure payments based oo resulting traffic levels or share the fees from resulting sales.

If I do a deal, what should I look for?

Retailers with a fair amount of experience working with them say portals are becoming more willing to consider more targeted promotions — so you can pick the spot for your ad or promotion. Other portals may help analyze ads and promotions to make sure an agreement helps drive traffic to your site. But you may have to ask for such assistance.

Are there alternatives to the top portals?

Some book, travel, investment and other midsize sites band together and create their own "network," advertising on one another's sites, bartering promotional links and other ways to increase traffic throughout the network, according to Barry Parr, an analyst at International Data Corp. in Mountain View, Calif. For example, someone searching for business and finance titles at a book site could be fed a targeted ad for an investment site.

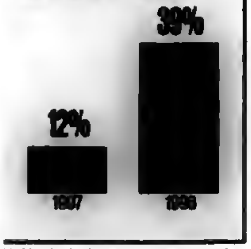
BUILD YOUR OWN VISA

NextCard Inc. has announced the My Visa program, which lets users personalize their credit card online. The program lets customers pick their own upgrades (low interest rate or higher credit line, for example), reward programs (which merchant to receive reward points from) and which picture to put on their card. Customers can choose from more than 1,700 photos from NextCard's Web site or upload a digital photo from their own collection (shown above). NextCard lets customers apply online and receive approval in a few seconds.

www.nextcard.com

More to Buy

Percentage of U.S. retailers selling on the Internet:



SOURCE: U.S. DEPARTMENT OF COMMERCE, WASHINGTON

JARGON JUDGE/ANNE MCCRORY

Thumbs down on 'version,' 'release'

SO YOU'RE IN the market for, say, some electronic-commerce products. You don't want any that are brand-new, so you don't look at any 1.0 versions. In fact, you think, the higher the number the more mature the product, the more it's been road-tested and the more functions it's had added since its debut. You find a Netscape family of products, Directory for Secure E-commerce, that's full of 4.0 versions.

Then you find out that, yes, Netscape Directory Server 4.0 is in fact in its fourth generation. But its Certificate Management System 4.0 really is a 2.0 version of Netscape's Certificate Server. And its Delegated Administrator 4.0 is, actually, *new*.

Netscape is hardly the only vendor that does this, of course. Microsoft did it with Exchange, going from the beta version to 4.0 in one generation. 3Com has done it with the newest PalmPilot, going from Palm III to Palm VII (though it claims that releases IV, V and VI will eventually come out, sort of like how the *Star Wars* movies debuted with parts IV, V and VI and only now — 22 years later — are getting around to parts I, II and III. Actually, releases III and V were announced last week.)

The bottom line: "Version" and "release" don't mean very much. The terms are technically correct: When products are tweaked, they indeed are new versions; when they're updated, they are "released" once more to the public.

Yet, linked indelibly with an arcane numbering system that makes less and less sense as time passes, they qualify as jargon and get my unequivocal thumbs down.

Sensible Beginnings

The terms did start out with some conventions. A full version uptick (from, say, a 3.0 to 4.0) usually implied a major rewrite or the addition of significant new functions. Lesser updates were released in "dot" upgrades — .2, .4 and so on. Bug fixes took up a second decimal position, such as 5.04 or 5.1a.

But with the exception of the bug-fix nomenclature, the rest of the "system" has gone out the window. Vendors play around with it at will — to get all their applications in sync for bundling or to keep up with the competition.

Does any high-tech jargon leave you steamed? Or smiling? Tell Anne McCrory, former *Computerworld* copy desk chief and now assistant business editor. Contact her at anne_mccrory@computerworld.com

Tracking versions and releases doesn't usually help you track the same product over time or compare products from different vendors — even if the initial products came out together (witness Quark XPress, now a 4.0, and Adobe PageMaker, at 6.5.).

How else could the industry handle this? Consider that version numbering never caught on outside computing.

The makers of Tide laundry detergent may change the formula from time to time, but the box doesn't announce Tide 7.0. And Stouffer's Lean Cuisine might redesign its product packaging or ingredients, yet it touts those progressions with labels like "new, redesigned package" or "new, improved taste."

Car manufacturers do it another way: They tweak their models every year and name them by date. Happily, some software makers are starting to do the same thing. It's a great idea!

You'd know off the bat when a product was last updated (assuming it comes out when promised). Even if there's a chance that this naming scheme could eventually confuse people — when Windows 01 is newer than Windows 98, for instance — hopefully, common sense will prevail.

But I really don't want to encourage updates every year. They happen too often already. I would, however, lobby for version standards — or, as with other jargon, to do away with the terms altogether. After all, plenty of other industries have made it work.

E-COMMERCE BRIEFS

Grocery Shopping By Handheld

Some European consumers soon will be able to scan bar codes into handheld computers, upload that data into their PC and then buy groceries over the Internet by sending their shopping list to a retailer's Web site.

Symbol Technologies Inc. in Berkshire, England, will soon roll out a pen-like handheld scanner that captures product bar codes. The device will work with the home shopping programs of several grocers in the U.K. and Denmark.

EBay Goes International

Internet auction house eBay Inc. last week said that it has teamed up with Australian company PBL Online Pty. Ltd. to offer a localized version of the U.S. vendor's popular auction service to users in Australia and New Zealand.

Under the terms of the agreement, the two companies later this year will launch a site that is customized for users in those two countries. The deal is eBay's first international venture.

Buying New Cars On the Net

Eight million new-car purchases will be influenced by the Internet in 2003, and almost half a million people will buy cars entirely over the Net, according to Forrester Research Inc. in Cambridge, Mass. Forrester predicts the expected 470,000 Net-only sales will total $12 billion.

European Summit Lauds U.S. E-commerce

In what could have been a panel of real-estate agents repeating their famous mantra, a group of electronic-commerce authorities in Amsterdam last week focused on location – meaning the U.S. – as the most important element for the success of electronic commerce.

Speaking at Gartner Group Inc.'s Internet and Electronic Commerce Europe conference, one consultant attributed the successful U.S. electronic-commerce model to various factors: widespread access to venture funding, proximity to technology developments, a low-cost telecommunications infrastructure, a "can-do" U.S. culture and its large, single economy.

In contrast, funding of new technology in Europe remains a problem and technology developments occur only in small geographic pockets, said Nick Smith, a principal consultant at KPMG Peat Marwick LLP in London.

Carol Rozwell, an analyst at Gartner, said U.S. companies have the best real estate, so to speak, and the best public relations efforts. The conference will soon be held in the U.S. (see item below).

Conferences

Best Practices in Resolving Year 2000 Issues. Fairmont Hotel, Chicago, April 12-13.

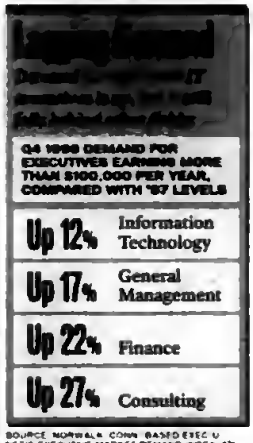
Learn how your organization can maximize the time remaining until Jan. 1, 2000. Speakers will include Giga Information Group Inc. experts as well as year 2000 practitioners.

Cost: $1,195 ($1,095 before March 5). Contact: Mary Jean Ahearn at Giga Information Group, (781) 792-2969; E-mail: conferences@gigaweb.com; *www.gigaweb.com/events/y2kbp*.

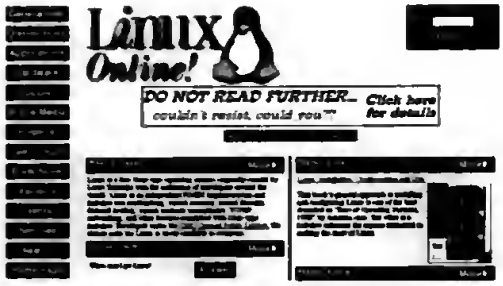
Internet and Electronic Commerce Conference and Expo (IEC '99). Javits Convention Center, New York, April 26-29.

The latest products, systems and technology solutions in the electronic-commerce world, plus more than 100 conference sessions (co-produced by Gartner Group Inc.).

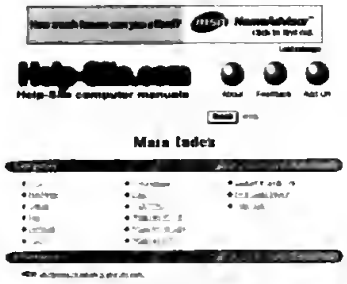
Cost: $1,195 to $1,395 (Gartner clients); $1,395 to $1,595 (others). Contact: Advanstar Expositions at (800) 331-5706 or (216) 723-9130; *www.iec-expo.com*.



SOURCE: NORWALK, CONN.-BASED EXECU NET'S EXECUTIVE MARKET DEMAND INDEX, AN ANALYSIS OF MORE THAN 17,000 JOB POSTINGS



FOR THE LINUX-OBSESSED: Info and links aplenty on this hard-core site



PALLID DESIGN, BUT BEEFY CONTENT: The nexus of online tutorials

Online Tutorials for Techies

Cool Web sites to brush up the latest and greatest career-enhancing skills

BY LESLIE GOFF

THE WEB is a great place to advance your technical savvy, but pinpointing the best online tutorials can take more time than learning JavaScript.

A keyword search of "tutorial" in Yahoo Inc.'s Computers and Internet category yields 314 sites, too many to wade through when all you want is a good primer on Linux.

A good chunk of the 314 are HTML, the Web programming language, or Java guides, and too many are for newbies rather than for seasoned IT professionals. Several redundancies turn up, too. Quite a few are outdated, and most are so specific to individual needs that they prove ineffectual to the majority. One was an interactive cadaver-dissection tutorial — but that shouldn't help you unless you're planning to kill your boss.

The following sites will bring you up to speed in three hot pockets of technology: applications development, Web-site design and Linux. You'll see broad-jump pits for finding truly usable frequently asked questions (FAQs), tips and techniques, reading lists, step-by-step instructions and other technical information on a diverse range of subjects.

HOT LANGUAGES

■ THE DEVELOPMENT EXCHANGE
www.devx.com

Organized by "zones," this cybercommunity for application developers is chock-full of technical guidance on today's hottest development languages and platforms, including Visual Basic, Java and JavaBeans, C++, enterprise (a look at corporate IT strategies), Active Server Pages, application/server information, dynamic HTML, Unified Modeling Language and Extensible Markup Language (XML).

Each zone features FAQs, actionable feature articles, links to relevant newsgroups and E-mail lists, and well-researched links to top Web sites offering even more information. The large zones also include a Tip of the Day, Download of the Week, Book of the Week, Site of the Week, an expert question-and-answer column and links to timely news articles.

Other features at the site include downloadable software and reference materials, product reviews, a database of user groups searchable by ZIP code, conference listings and online discussion groups. Registration is required to gain access to some areas, such as the Tip of the Day and the discussion groups.

HOT OPERATING SYSTEM

■ LINUX ONLINE
www.linux.org

Get acquainted with the penguin at this site, where you can learn what Linux really is (simply put, a user-friendly derivative of Unix) and how to get started using the operating system. In addition to the ready-to-use tutorial, the site also includes a suggested reading list; a guide to applications, tools and utilities that work with Linux; a calendar listing of upcoming Linux conferences; a global user group directory; and links to news articles, Linux distribution sites, sites detailing various Linux projects and more.

HOT WEB SITE DESIGN

■ PROJECT COOL
www.projectcool.com

Featuring the Developer Zone, this is an online encyclopedia of all things related to effective Web-site design, including languages (HTML, dynamic HTML, XML, JavaScript and so on), techniques (cascading style sheets), audio, style and color charts, Internet reference material and more. You will find enough step-by-step instructions here to keep you busy for weeks. And Project Cool is cool, with black starry-night backgrounds and the straight dope on how to create purposeful sites that enhance your company's presence in cyberspace.

In addition to the online tutorials, Project Cool also features PeopleSphere, a list of mailing lists which you can use to connect with colleagues; DevSearch 2.0, a search engine optimized for finding Web-based information about the Web; Sightings, a guide to best-of-breed Web sites (based on the philosophy that if you want to be a great writer, you read great books, and if you want to be a great Web designer, you look at great Web sites); and the Co-op, where you can purchase discounted Web development software and tools.

HOT STARTS

Metasites that Cover The Gamut of IT

■ HELP-SITE COMPUTER MANUALS
http://help-site.com

This guide to tutorials and online manuals is low on design but high on usability and content. It links to tutorials and primers on myriad hardware platforms, development languages, operating systems, networks and more, including Macintosh, modems, motherboards, routers, Java, C++, Fortran, Unix, Windows NT, Internet and TCP/IP.

■ THE INTERNET RESOURCE FOR NETWORK PROFESSIONALS
www.dc.net/ilazar

Here's a well-researched, concise guide to educational sites on all aspects of networking, including Open Systems Interconnection layers 1 and 2, TCP/IP, routing, Internet technologies, security, network management systems and network operating systems. Irwin Lazar, a network analyst and consultant with more than six years of experience in "the design, deployment and management of large-scale multiprotocol networks," according to the site, puts his know-how to good use in unearthing usable sites for fellow IT professionals. Among the highlights are an extremely detailed FAQ on Dynamic Host Configuration Protocol and Beginning BGP, a detailed tutorial on using the Border Gateway Protocol.

■ SCOTT'S TUTORIAL HOTLIST
http://cires.colorado.edu/people/peckham.scott/tutors.html

Scott Peckham is no slouch. He has a doctorate in geophysics from the University of Colorado, and his primary professional interest is "the applied mathematics of nonlinear science and its application to problems in hydrology and fluid dynamics," according to his bio. But that's only one reason to trust his listing of online tutorials for Unix, Xwindows, Web protocols, C++ and more. It hasn't been updated since 1997, but it contains links to some real jewels, such as Coping With Unix: An Interactive Survival Guide and SNMP and CMIP: An Introduction to Network Management.

Scott's list is especially useful if you're involved in scientific computing or if you're a business user transitioning into IT. Check it out. (Then surf over to his home page for some unique choices on where and how to spend your free time on the Web, *http://cires.colorado.edu/people/peckham. scott/home.html*.)

■ THE LINUX DOCUMENTATION PROJECT
http://metalab.unc.edu/mdw/linux.html

A no-frills, hard-core Linux site with links to just about every useful page concerning Linux on the Web. ■

Goff is a freelance writer in New York. She can be contacted at lgoff@ix.netcom.com.

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NEW REPORTS

How CEOs Judge Online Success

Many top executives don't consider their companies' online ventures to be part of the core business and usually judge their success only by revenue, according to a new report by Jupiter Communications Inc. in New York.

The Jupiter Mindshare Report found that CEOs at 70% of traditional consumer businesses are involved in online initiatives, but only 24% measure the success of online projects as part of their core business.

The survey of 60 high-level executives states that revenue earned by online initiatives and the number of online customers are the most common metrics for judging online success – even though Jupiter recommends a broader examination.

The Mindshare Report is available as part of an ongoing subscription service.
www.jup.com

Health Care Evaluation

Meta Group Inc. has announced a six-stage evaluation system that allows health care providers to rate their IT strengths, weaknesses and criteria for survival.

The "Healthcare IT Check-up" was designed to help organizations rank how well various aspects of their infrastructure work, and it provides strategies for improvement. Meta states that less than 4% of hospitals are strong in all six areas, which include billing, clinical applications and disease management.
www.metagroup.com

BRIEFS

E-Bank Launched

First Internet Bank of Indiana (*www.firstib.com*) opened for business last week, claiming to be the first bank to offer full, real-time banking services on the Internet.

Most online banking services are handled via batch processing. Firstib.com uses Fillet technology from Virtual Financial Services Inc. in Indianapolis to integrate the bank's back office and the Web. The Indianapolis-based bank's customers can make deposits through a variety of channels, including wire transfers and the MAC network of automated tellers, with additional data available for paying subscribers. The program offers advertisers options for placement in the Hoover's online store and now specific editorial content.

Outsourcing Deal Frees IT

The Dominion of Canada General Insurance Co. in Toronto has outsourced management of its legacy applications to Boston-based Keane Inc. under a five-year, multimillion-dollar contract. This will allow in-house IT workers to focus on new technologies.

Hoover's Strategy

Hoover's Inc. has launched an E-commerce Merchants Program aimed at offering online retailers a chance to test their goods to Hoover's subscribers. Hoover's, based in Austin, Texas, offers free business information online.

E-mail Marketing

E-mail list manager NetCreations Inc. in New York last week signed on with Cool Site of the Day to manage E-mail marketing lists for the Web publishing company and to deliver the "Cool News" newsletter to subscribers.

PAUL A. STRASSMANN

Deflating Microsoft

ARGUING THAT the antitrust suit against Microsoft could hurt the economy, Microsoft has been taking out newspaper ads stating: "... the government is spending millions of taxpayer dollars in a court case that would stifle competition and interfere with an industry that is responsible for 25% of the nation's economic growth."

If 25% of the economic growth is somehow linked to Microsoft's trial, the prospect of crippling the economy warrants attention. What is the merit of its claim? After all, IT-related employment and revenues are only a small component of the U.S. economy. As defined by the Department of Commerce, the information technology and electronics industry revenues accounted for 8.1% of the gross domestic product (GDP). Microsoft itself earns only 2.3% of the industry's revenues. So here we have 0.19% of the economy alleging that government may be jeopardizing a quarter of the nation's growth by stifling Microsoft.

Where did the 25% figure come from? A helpful executive at Microsoft's public relations agency directed me to the Commerce Department's report on "The Emerging Digital Economy" (*www.ecommerce.gov/emerging.htm*). Indeed, the report stated in its executive summary that "in recent years, IT industries have been responsible for more than one quarter of real economic growth."

There are problems with the data backing up the executive summary. The definition of what is "information technology" included consumer entertainment: household audio and video, radio and TV equipment, radio broadcasting, television broadcasting and cable and pay TV. If I limit IT to computer hardware, semiconductors, instrumentation, office machinery, software, computer services and telecommunications (both voice and data), the size of the entire industry shrinks from 8.1% of the GDP and a growth rate of 14.7% to 5.4% of the GDP and a growth rate of only 8.8%. So that 25% figure is just puffery.

More flagrant is the distortion of the role of the information industry by using adjusted prices instead of actual prices for making comparisons. To adjust IT purchase costs to reflect decreasing prices of computing, government statisticians invented an "information technology" cost index. That's based largely on dollars per MIPS, dollars per megabyte of storage costs and similar favorable trends.

Applying fictional indexes amplifies the calculated growth that was attributed to "information technology." Ninety-three dollars worth of cash spending in 1990 was marked down to be worth only $69, while $112 worth of cash spending in 1996 was marked up to $268. By tilting the scales, the spending for IT comes up looking much better than the rest of the economy.

Surely, we're now buying more computing power per dollar. But equating cheaper computing with economic growth is stretching the claims about the favorable economic impacts of computers beyond what is demonstrable.

Microsoft shouldn't use sound-bite statistics out of context.

Though the government included the GDP growth number based on actual prices, that was overlooked in the Microsoft advertisement. Based on actual prices paid by customers, IT has made a noteworthy contribution but a materially lower one than claimed in the advertisements.

The Microsoft advertisement is deceptive on three counts: Microsoft, with only 0.19% of the GDP, shouldn't represent that damage to itself could potentially injure the entire economy. Microsoft shouldn't claim for itself the accomplishments of the entertainment industry. Nor should Microsoft claim that IT is somehow responsible for 25% of the nation's economic growth based on fictional metrics when that number — on a cash basis — is much lower.

Microsoft shouldn't selectively use sound-bite statistics out of context to give misleading information about what the IT industry has actually delivered. ◗

Strassmann (paul@strassmann.com) has been plagued by overstatements about the merits of IT since he worked on IBM's CPC calculator in 1954.

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KHNNMEN

ENERGY DEPOT AND ITS ROOTS

Energy Depot's developers refer to it on an "environment for managing, focusing and measuring initiatives" and an "enterprise project management workbench." The key to its success lies in the tight integration of project functions.

Energy Depot is a Web-based application that will run on Columbia Energy's and Home Depot's intranets. It's being built on Sun Microsystems Inc.'s Java-based NetDynamics technology.

A unique attribute of the application – not available commercially, the companies say – is its ability to accommodate user-chosen project methodologies and terminology. In fact, its table-driven architecture can accommodate non-IT activities such as construction projects.

Energy Depot has roots at both companies and at AlliedSignal Technical Services Corp. in Columbia, Md., where several years ago, IT manager Eric Singleton guided the development of SoftWare Implementation and Management (SWIM).

Singleton calls SWIM "an electronic console of tools" and says it increased developers' productivity three to five times by eliminating much of the communication delays and miscommunication within projects. "It made everything tighter and faster and closed the than gaps between all the project groups," he says.

Harinder Nanda (hnanda@bellatlantic.net), a SWIM user and one of its developers, says SWIM has been used on more than 70 projects in his department. It's clear that SWIM has greatly contributed to software quality, he says. By providing a comprehensive and disciplined way of capturing project information, SWIM allows developers to avoid the pitfalls of earlier projects and to borrow best practices from them, he says.

Nanda says SWIM enabled AlliedSignal to move from Level 1 to Level 2 on the Software Engineering Institute's five-level Capability Maturity Model and will help get it to Level 3 by year's end.

"Earlier, I'd just do design and coding and get things out," Nanda says. "Now, I focus more on the quality of the product and, rather than just implementing 10 features, I'd rather implement five and get a quality product." – *Gary H. Anthes*

LYNNE SILER

OLUMBIA ENERGY'S Eric Singleton (left) and Home [illegible] Pa[illegible] H[illegible] ed money and exchanged ideas with the creation of Energy Depot

PARTNERS IN DEV

Two companies from different industries team up to create their own project-mana

WHEN A COMPANY has wanted to develop custom software, it traditionally has had two alternatives — develop it in-house or contract it out to a consulting firm or systems integrator.

Now, Columbia Energy Group and The Home Depot Inc. say they have found a better way. When they learned that the project management system of their dreams didn't exist in the marketplace, they decided to develop it themselves — together.

It would be hard to find two companies with seemingly less in common than Columbia, a $7 billion, Herndon, Va.-based natural gas supplier, and Home Depot, a $24 billion, Atlanta-based retail chain. But they have common business needs and technical skills that complement each other and identical information technology mandates.

"The challenge from my board is very clear: 'Don't come up with new systems, give us a strategy that makes us money,' " says Eric Singleton (esingle@columbiaenergy.com), vice president and CIO at Columbia Energy. "I'm measured and IT is measured on the impact we have on the business numbers."

"In the old days, you did your system and then went on to the next project. Your success was your system," agrees Paul Hoedeman, Home Depot's vice president of information services. "Now, the success is the business results."

But insisting that IT projects produce business results makes managing and measuring them much more difficult. Project management and accounting systems typically are geared toward measuring whether projects are proceeding on time and within budget; they're much less likely to tell management whether a project will serve the company's business objectives.

Enter "Energy Depot." It isn't a single tool but an integrated collection of about a half-dozen tools, all sharing a central repository of project information. Energy Depot maintains information on project staffing, helps enforce methodologies and standards and automates the analysis and tracking of costs and benefits. It tracks staff time, issues, bugs, requirements, features, documentation and other project items.

The cost of developing Energy Depot would have been much higher had the companies contracted with a third-party developer, Hoedeman says, because they would have paid inflated billing rates to consultants and would have been less able to leverage substantial in-house expertise. Indeed, no money is changing hands in the deal. Nevertheless, the companies see the benefits in nonfinancial terms.

"We didn't do this to save money, necessarily," Hoedeman says. "It was more to get other points of view and more creative ideas. Home Depot is moving into a lot of new areas, and talking to a company in another kind of business may help us keep the solution a little more robust."

The two companies began their dialogue based on an earlier alliance between Singleton and Hoedeman at another company. But it was the complementary skills and common goals of the two companies — not the personal relationship — that propelled the partnership, they say.

The companies say their unusual teaming arrangement brings several benefits. Home Depot brings to the table "expertise in industrial-strength Java development," according to Hoedeman, and Columbia offers extensive experience in the development of Web applications and intranet and Internet sites.

Another advantage to the deal, the companies say, is that it leaves them — not a contractor — in possession of the insights and expertise developed along with the software.

"This approach is exciting for a multitude of reasons — complementary talents in IT, speed and cost leverage and establishing a relationship with a premier retailer," says Paul Feldman, president and CEO of Columbia Energy Services.

"The basic idea is great because they are achieving some economies of scale," says Peter Bendor-Samuel (pbendorsamuel@infoserver.com), president of Dallas-based Everest Group, an outsourcing consultancy. "The price of external development has been rising at an exponential rate recently, to some degree driven by the year 2000 problem," he says.

> The challenge from my board is very clear: 'Don't come up with new systems, give us a strategy that makes us money.'
>
> ERIC SINGLETON, COLUMBIA ENERGY

IS IT RIGHT FOR YOU?

But Bendor-Samuel says the approach isn't well-suited to many companies. "The downside is: Are you really that expert in developing applications? There is no area in IT more difficult and risky than brand-new software development," he says. Doing it with another company just increases the risk of failure, he says.

Singleton says the companies are managing risk by applying the same, disciplined processes that the project management tool is intended to encompass and automate.

That means keeping the project team small, setting realistic schedules, starting with the most basic functions and insisting that designs and work plans be scrupulously followed. Hoedeman says, "Things that can risk any project can risk this one. That's why it's important to keep the scope tight and focused."

Key project people from both companies meet in Atlanta or Herndon about every two weeks and they supplement that with frequent teleconferencing and E-mail, Hoedeman says. Still, "There's no substitute for face time; you have to be in the same room. That's the single biggest key to success," he adds.

Project management expert Joan Knutson, president of Project Mentors Inc. in San Francisco, says partnerships of this type are likely to be marked by a high level of commitment — at least early on. "A consulting firm just wants to get the job done, get the billable hours and then leave," she says. "But two companies that are trying to accomplish the same kind of thing are maybe more simpatico."

But Knutson says he wonders if Columbia Energy and Home Depot will be able to sustain their rapport indefinitely. Whatever the risks, both companies say development alliances of this type have become a central part of their IT strategies.

"Instead of going to a big IT consultancy, I'm going more after collaborative arrangements, and we are seeing tremendous success on both sides," Singleton says. "There tends to be a deeper level of interest in helping each other succeed — you have a gap I can fill, and I have a gap you can fill, and we can do that without me paying you $10 million or $20 million." ◗

Anthes is Computerworld's features writer for business and technology topics. His E-mail address is gary_anthes@computerworld.com.

VELOPMENT

– Home Depot and Columbia Energy –
gement software By Gary H. Anthes

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NOTEBOOK EXTREMES

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IT Contractors: Still Can't Live Without 'em

The completion of many year 2000 projects this year will free up hordes of IT contractors. And though many managers hope to rely less in the future on "leased workers," others say there still will be plenty of work to go around

By Leslie Goff

DEMAND FOR information technology contractors should hold steady this year, even as year 2000 projects wrap up in the second half. After that, all bets are off, as many companies are hoping to reduce their use of contractors.

"Because of the labor shortage, we have more contractors than I would like," says Dave Zitur, vice president at Carlson Shared Services, the IT arm of Carlson Cos. in Minneapolis. "I want to invest in our people, in their career development, to get the skills we need and depend less on contractors."

Carlson, a hospitality company that owns several hotel and restaurant chains such as Raddison Hotels International Inc., is using approximately 200 IT contractors in addition to its staff of 700 to 800 IT professionals. That's in line with other large companies, which on average are using contractors to boost their permanent staff by approximately 20% to 25%.

The millennium bug is steering demand this year, but it isn't the only driver. Electronic-commerce initiatives and enterprise resource planning (ERP) implementations also are putting contractors in the fast lane. And although IT managers say they hope for some cruise control after they park their year 2000 projects, the IT skills shortage, ongoing systems maintenance and new development work may keep contractors in gear.

A mainframe shop at a large insurance company, which the IT director asked not to be identified, will keep an average of 200 contractors even after it finishes its year 2000 conversions later this year. The company, which has 1,000 full-time IT employees, anticipates funneling the resources it has been spending on 30 year 2000 contractors into other projects that require contract help.

At Caterpillar Inc., a Peoria, Ill.-based heavy equipment manufacturer, IT managers expect little or no fluctuation in the number of temporary IT staffers after year 2000. In addition to year 2000 projects, Caterpillar is using temporary workers for PC and LAN support, help desk and Unix support, Oracle database administration and development, and client/server applications development.

More of a concern to Caterpillar is the Asian economic crisis, says Ron Rosenow, human resources manager for the company's corporate information services group. The company has approximately 330 IT temporary workers and 1,600 permanent IT staff.

"We try to have enough leased workers in place so that if we get into an economic downturn, we can get by without laying off full-time employees," Rosenow says. "We plan to stay fairly flat, but we might have to reduce the number [of temporary workers] depending on the economy this year. A lot of our business is overseas, and certainly the Asian situation is having an effect."

Rosenow's use of the term "leased workers" highlights another key trend in contractor demand this year. Larger companies have become strict about who they hire, opting to bypass 1099 contractors altogether. Instead, to avoid any Internal Revenue Service scrutiny, they're working with preferred vendors, leaving all hiring decisions to those agencies.

Caterpillar's IT managers have even excised the word "contractor" from their vocabulary, referring to hired guns as "leased workers" instead.

"We like to use firms that have their own W2 employees; we have gotten away entirely from any 1099 arrangements," Rosenow says. "You get to a point where it's hard to distinguish between 1099s and your own employees. We also stay away from incorporated sole proprietors. Things get fuzzy with the IRS rules, so we just prefer to stay away from the independents."

Game Plan

Caterpillar works with a list of approximately 30 primary and secondary agencies. The anonymous insurance company works with only one agency, which subcontracts placement of contractors through other agencies. The insurance firm doesn't get involved in choosing the subcontracting agencies, but the terms of its contract with the primary agency bar the firm from hiring any 1099 workers or sole proprietors.

Carlson, which has a roster of 35 preferred agencies, avoids 1099s or sole proprietors, Zitur says. He says he usually hires contractors for periods of about three months, and in addition to year 2000, he looks for workers who have Forte, Web and Oracle Financials skills. "We sometimes use niche agencies that are focused on a specialized skill set, but they still have to sign our contract as agencies — they are not hired as individual performers," he adds. When 1099 contractors sneak in the back door, they're immediately terminated or forced to sign up with an agency to stay on their projects, Zitur says.

An exception to the trend is watchmaker Fossil Watches Inc. in Dallas. With only 16 people on its IT staff and only four contractors, Dan Heard, CIO and senior vice president of operations, says he can manage the situation closely enough to make the necessary IRS distinctions. He says he prefers to hire 1099s to working with agencies because he believes he gets better talent.

"Agencies cost us more money, and we don't get the same caliber of people as when we hire direct," Heard says. "We aren't high-volume, and we don't need people for ongoing support. We look for reliable people with high standards for short-term development."

Because Heard's contractors are hired for a limited time, work on their own premises, use their own equipment and don't draw any benefits, he says he isn't worried about their 1099 status.

Demand for contractors at Fossil should go up after year 2000 testing is complete, Heard says, because of a new focus on an ERP implementation. But contracting resources as a percentage of his software development budget could fall to 15% next year, he says.

Goff is a freelance writer in New York. Contact her at lgoff@ix.netcom.com.

IT JOB TITLE	RANK
Project manager	1
Network administrator/analyst	2
Senior programmer/analyst	3
Webmaster/Web designer	4
Programmer/analyst	5
Senior systems analyst	6
PC technical support specialist	7
LAN manager	8
Technical support manager	9
Manager of Internet/intranet technology	10

TECHNOLOGY SKILL	TOOL	PREMIUM PAID
Development tools	Progress	35%
Client/server applications	Geac (Dun & Bradstreet)	29%
Office/E-mail/Groupware	Novell GroupWise	29%
Systems software/support	Data warehousing	28%
Internet	ActiveX	23%
Operating systems	MVS	22%
DBMS and RDBMS	Oracle	20%
LAN	Novell NetWare	18%
Networking	WAN-wide	18%
Internetworking	Gigabit Ethernet	16%
Languages	Cobol	14%

SOURCE: COMPUTERWORLD'S ANNUAL SKILLS SURVEY, NOVEMBER 1998

Paradise Found

Balmy breezes. Pristine beaches. Alpine meadows. Yes, you can live and work in paradise. But don't forget to pack your beeper

BY BRONWYN FRYER

WHERE DO IT professionals who slog it out in the steel-and-concrete jungle take their vacations? They go to islands, resorts and national parks: places that are the polar — or tropical — opposite of cubicles and computer rooms.

Yet there are plenty of information technology professionals who get to spend their lunch hours snorkeling, relaxing on the deck of a cruise ship or taking a few ski runs. Given the current demand for IT skills, it isn't difficult for technologists who love the outdoors to find jobs far from the madding crowd.

Still, IT folks should have no illusions about enjoying endless hours working on their tans. Paradise-dwellers must wrestle with network crashes just like their urban brethren. As University of Hawaii IT director David Lassner says, "I have yet to wear a tie to work — but I put in a lot of 12-hour days."

That can make paradise fade a little bit. But "all it takes is a business trip with a few plane delays and traffic jams to get my perspective straight," says Charlie L'Esperance, vice president and CIO at Vail Resorts in Colorado.

It takes a special kind of person to adapt to the more casual lifestyle and work atmosphere that come with such jobs. "If you're a hard driver from MIT with a big ego, we have no place for you," says John Harshaw, shipboard director of IT at Carnival Cruise Lines in Miami. "We want people who are relaxed, who have a sense of humor and who work well with others."

We asked the five IT professionals profiled below to tell us how they found their current jobs and what it's like to live and work in paradise. Here's what they had to say.

David Lassner

Director of IT
University of Hawaii
Honolulu

Job Responsibilities: Oversees all IT services for 55,000 student, faculty and administrative users on 10 university campuses and five education centers across six Hawaiian islands.

How he got the job: Came to the university as a graduate student from Illinois in 1977 and has worked there since.

Upsides: "During my first year here, I remember doing a demo at a beach house in Lanikai, one of the loveliest beaches on the island. I remember being unable to believe that this was my job. I still love living here," he says.

Downsides: Hard work and "rock fever. Like anyone else who has my kind of job, I work much too hard. So I'm not as able to appreciate paradise as some may think," he says. He adds that many people can't get used to the fact that anywhere else is thousands of miles away. "You're stuck on an island. Some people find it hard to adjust to that," he says.

Advice for job-seekers: "If you want to be taken seriously, come here and apply in person. Also be prepared to work in a very multicultural environment. Life is a little slower-paced. It takes an adjustment," he says.

John Harshaw

Manager of shipboard information systems operations
Carnival Cruise Lines
Miami

Job responsibilities: As a ship's officer, Harshaw oversees information systems and services. Carnival Cruise ships each support 60 to 70 PC users and 100 or more computerized point-of-sale terminals.

How he got the job: Came to Carnival in 1994, taking "a huge pay cut" from his former position as a stressed-out IT manager in exchange for the chance to work on the ships, he says.

Upsides: "I live and work in an environment that people pay thousands of dollars a week to enjoy. In January of 1996, I went scuba diving 17 times. My expenses are paid. I get to wear a uniform," Harshaw says. He also enjoys mingling with people from many nationalities and working in a "completely nonracist" environment, he says.

Downsides: "You live by the beeper. And for 10 months straight, you eat, drink and work with the same people all day, every day," he says. Salaries are 20% to 30% lower than the standard, but because living expenses are covered, "it evens out," he adds.

Advice for job-seekers: In addition to a technical degree or equivalent work experience, Harshaw looks for people who like people. "The first thing I ask someone is why they want to work here," he says. "If you say, 'I've always wanted to work on a ship,' that's a good start." Military experience is a plus.

Charlie L'Esperance

Vice president and CIO
Vail Resorts Inc.
Vail, Colo.

Job responsibilities: Oversees the development and support efforts for 65 information systems and manages 10 telecommunications professionals at the site of the 1999 World Alpine Ski Championships.

How he got the job: An executive search firm lured him to Vail in 1994. "I was an easy hire," he says.

Upsides: "Being able to take a few runs early on a fresh-powder day; playing golf at 8,000 feet at dusk; fly-fishing after work" and so on — all within 15 minutes of his home and office, L'Esperance says. Best of all are the friendships he's made with co-workers. "Most of us are here for the lifestyle. We work very hard, but we have fun," he says.

Downsides: The cost of living. "My employer had made great progress in the past few years adjusting pay scales, but we'll never be able to pay people enough to compensate," he says. Peak ski season is also tough. "Almost everyone works nights and weekends. When most people are enjoying Thanksgiving

and the Christmas holidays, we are working our hardest," he says.

Advice for job-seekers: "Have technology experience with service companies: hotels, resorts, airlines, travel agencies, car rentals or restaurants. Be the best at what you do," L'Esperance says. "There are lots of technology professionals who would like to work for Vail Resorts, and we are pretty selective about who we hire."

Al Blake

IT manager
Secretariat of the Pacific Community
Noumea, New Caledonia

Job responsibilities: Oversees all IT activities for a developmental organization that provides technical assistance to the Pacific Island states and territories. Blake manages six IT staffers in New Caledonia, a South Pacific island favored by French tourists, and Fiji.

How he got the job: "I was working as a marine binlogist with the ForumFisheries Agency in the Solomon Islands. There are very strong links between all the regional organizations in the Pacific — and only so many bars to drink at — so it was pretty easy for the Secretariat to check up oo me," he says.

Upsides: "There is a beautiful, white-sand beach 25 meters from my office, which I can go to any day. I have been to Fiji — a mecca for scuba diving — many times," Blake says. He also loves New Caledonia's French-tinged culture, with its croissants and café au lait.

"There is much job satisfaction," he says. "I've been able to bring the very first E-mail messages to several Pacific Island countries. There are not many places left in the world where it's possible to do that."

Downsides: A high cost of living and little time to enjoy paradise. "It was only on my 10th trip to Fiji that I finally managed to fit in a scuba dive," he says. Other drawbacks include the inaccessibility of spare parts. "If a critical item of equipment breaks, it will take a minimum of three weeks and huge amount of paperwork to fix it," Blake says.

> I remember being unable to believe that this was my job. I still love living here.
>
> ◀ DAVID LASSNER, DIRECTOR OF IT UNIVERSITY OF HAWAII

Advice for job-seekers: Come prepared for life in a hot, remote corner of the world. "Develop as wide a range of skills as possible. In addition to computer skills, know how to do plumbing and electrical work," he warns. He also advises to "grab chances like this when they turn up — they woo't come twice."

Michael Kirby

Chief, computer support services
Yellowstone National Park
Yellowstone, Wyo.

Job responsibilities: To modernize Yellowstone's computer infrastructure, review business processes and software and work with "an excellent team of computer and telecommunications folks," he says.

How he got the job: "I ran across this job on the Internet" at Cool Works (*www.coolworks.com*)

Upsides: "I'm in Shangri-la. Looking out my office window, I see blue sky, historical stone buildings, a herd of elk and an occasional coyote. During lunch, I like to go cross-country skiing," Kirby says. He also enjoys raising his two teen-age sons in a close, friendly community. "When I go back to the city, I have to retrain myself to lock my car," he says.

Downsides: "It takes 90 minutes to get to a city of any size. We have all the necessities here, but you just can't go down the street and pick up a new computer. And the telephone company out here has limited services. [Integrated Services Digital Network] is out of the question," he says.

Advice for job-seekers: To get broad experience in the computer field. "Out here, you have to be self-sufficient and able to make judgments on limited technology," he says. ▶

Fryer is a freelance writer in the paradise of Santa Cruz, Calif.

DRIVING THE DEAL/JOE AUER

Arbitration Could Be Better Alternative in IT Contract Disputes

LITIGATE OR ARBITRATE? Today, that question is becoming more common than ever. Traditionally, when suppliers and customers have disputes, one of them sues — hoping, usually, to settle the case before too much money and time is spent. In today's backlogged court system, that can be a very expensive and time-consuming way to solve a problem, which of course favors the company with the deepest pockets. So, some companies are using arbitration to resolve technology contract disputes. Last year, 284 cases regarding computer technology — with claims and counterclaims of $465 million — were filed with the American Arbitration Association (AAA), up from 184 cases in 1995. In arbitration, a case is presented to a panel (usually three people) of neutral third parties who listen to testimony and arguments.

Because there isn't a backlog of cases, hearings often can proceed almost immediately.

What's more, the arbitrators generally are more technically competent than a jury off the streets. In arbitration, you specify your panel of arbitrators from a list of designees compiled by the AAA, and you have some flexibility in assembling the expertise required.

Technical and legal issues aren't always the only disciplines needed in a dispute, according to Warren S. Reid at WSR Consulting Group in Encino, Calif., an expert in management, technology and litigation consulting. An accountant who's familiar with the financial impact of these types of cases can determine a damage calculation, for example.

Ultimately, your corporate law department should decide if arbitrating technology contracts is right for your situation and whether to include the appropriate language in your contracts.

But the best way to reduce the likelihood of a dispute or ensure you're successful if there is a dispute is to negotiate clear and complete contracts that describe the entire deal you're doing.

Hotelier Solves Early Checkout

An international hotel company learned a lesson (for all of us) when it secured a supplier to convert its central reservations and intrachain communications systems. It also wanted to outsource both the help desk function and hotel staff training on the new system.

Originally, they packaged the deal as a single transaction, advising potential suppliers that if they were capable of performing the conversion but not the training or help desk functions, they should secure a subcontractor or joint proposer with those capabilities. A single supplier was retained to perform all functions for one of the company's hotel chains. Unfortunately, the supplier was late or incomplete in the performance of several individual hotel conversions, and the company was powerless to deal with the supplier's poor performance. The company needed a deal with some teeth in it to eliminate these issues for its remaining hotel chains.

[illegible] is president of International Computer Negotiations Inc. (www.dealdeskdeals.com), a Winter Park, Fla., consultancy that educates users on high-tech procurement. ICN sponsors CAUCUS: The Association of High-Tech Acquisition Professionals. Contact him at [illegible]

For those deals, it came up with a totally different kind of contract. The supplier had to perform a phased conversion with milestones, including acceptance tests for each of the deliverables. The contract specified that the supplier was required to meet all milestones in the conversion before being awarded the staff training and help desk contracts. Payments were tied to acceptance of the deliverables at specific milestones. This time, the supplier performed like a champ.

The hotel company's IT executives took a few other steps to make sure things went better: First, they had hotel company management trained on the new system. That allowed for more informed monitoring of supplier compliance during the conversion, giving the managers a better handle on any problems. Staff at the individual hotels also were given preliminary training, allowing a smoother transition to the system.

Here's the takeaway: Once you decide to outsource functions like conversion, training and help desk, pay attention to how the functions are packaged to potential suppliers. And you can use successful performance of the initial pieces of the outsourcing as a requirement for the supplier to win more business.

Having management involved and using a phased approach can lend more control over affected operations and ease employee tensions that may accompany an outsourcing.

Most important, link payment to acceptable performance of the supplier's obligations. That approach helped the hotel stop an early "checkout" by its supplier. ▶

WORKSTYLES

Etiquette

MANNERS FOR THE MILLENNIUM

Online and off, America is going through an etiquette renaissance as business and technical people realize that to get ahead, manners count.

So says Sue Fox, a 10-year Apple Computer alumna who's now president of The Workshoppe, a Los Gatos, Calif.-based etiquette service. The company teaches table manners, business and international protocol and media training. Fox also is writing *Etiquette for Dummies*, to be published this fall by IDG Books Worldwide Inc., which is majority-owned by the same parent company as *Computerworld*. Fox and Workshoppe consultant Joie Gregory, president of New York dining etiquette firm The Right Fork, note that in our fast-paced, technical gadget-laden world, technologists and others forget the manners we learned as children. It's not that we're oafs, they insist, it's just that we forget to pay attention to the little things like the following:

■ The importance of a firm handshake, first impressions and remembering people's names. Working in front of a computer screen all day can inure you to usual social graces, Fox says. Agrees Gregory: "People in advertising or PR are used to dealing with people all the time. In technology, we're used to dealing through computers talking to people."

■ Keeping the conversation accessible to all at social gatherings by not using jargon and insider terms that may stymie new acquaintances.

■ Not appearing rushed or impatient: Clients complain that haste-based rudeness is predominant in modern life, Fox says. "What I've noticed is people not being good listeners, looking at their watch in a conversation or during a meeting," she says. "If people don't have the time or interest in meeting with someone, they just shouldn't do it."

ETIQUETTE MAVEN Sue Fox shows techies how to mind their manners

And with the millennium comes the need for new types of manners to govern the usage of technology. Fox offers these tips:

E-mail: Respond within a day or so or at least acknowledge its receipt. Also, close with a salutation ("Regards, Joe") and remember to put a topic in the subject field.

Cellular phone: Turn it off during dinner unless you're a doctor (or, OK, systems administrator) who has to be available to handle a crisis. If it rings, excuse yourself from the table to talk. If you're expecting numerous critical calls because your company is being acquired or undergoing a major systems upgrade, put off social plans. Fox says a business associate once took five calls in one hour during a meal. "If things are that critical, they probably shouldn't have gone to dinner," she says.

Coastal differences: Easterners are more formal in dress and manners than Westerners, who are more laid back. And if you're traveling to the South, dust off your copy of *Emily Post* first – they're mighty proper down there. Even in an increasingly global society, certain traditions prevail. ▶

– *Anne McCrory*

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Source Code: MS39

TECHNOLOGY

WINDOWS 2000 UPGRADE MAY TAKE TWO YEARS

Windows NT 4.0 customers should plan now if they want to upgrade to Windows 2000 within two years, say analysts: It could take that long to switch from NT's flat-file structure to the hierarchical file structure of the Active Directory in Windows 2000. ▸ 67

INTERVIEW: RED HAT CEO

Robert Young of leading Linux vendor Red Hat Software talks about Linux's open-source code model and how Red Hat will offer support for the Unix variant. ▸ 62

AN ACCIDENTAL Y2K TOOL

NetSuite designed a network auditor — and found out the tool suite is a fast way to cbeck hubs, routers and other net infrastructure for Y2K compliance. ▸ 67

VPN SECURITY IN-HOUSE

Hallmark disregards warnings from VPN providers about complexity and pulls its VPN security management. ▸ 68

IBM EMBRACES FIBRE CHANNEL

After years of supporting its own Serial Storage Architecture, IBM finally commits to the more popular Fibre Channel with a souped-up version of a Fibre Channel RAID array and a new SCSI-to-Fibre bridge. ▸ 66

FRANKLY SPEAKING

How it should be: IT listens. How it is: IT justifies. Frank Hayes lists ways in whicb the relationship between IT and users is, shall we say, suboptimal. ▸ 72

MATERIALS GET SMART

Tiny systems of sensors, actuators, processors and communication devices are appearing in everything from truck tires to paint. We look at the advanced technology that some say means "tbe end of inert matter." ▸ 70

THE SKINNY ON SCANNERS

With prices plummeting, busy executives may want scanners on their desks, whether for digitally recording business cards or updating the intranet. ▸ 71

FLASHBACK: DAWN OF DEC

Former head of Digital Ken Olsen describes how in 1957 be and two others took $70,000 and and old mill and created a juggernaut. ▸ 80

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ERP: CORPORATE HANDYMAN

YOU HAVE LEGACY SYSTEMS that don't talk to one another. The year 2000 problem. Outdated business processes. Inconsistent data. Each of these is a problem by itself. Together, they mean chaos. ERP may just be the catch-all fix. *Computerworld* talked to 23 IT managers who are using their ERP implementations, to solve multiple problems — and, in general, arc pleased with the results.

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LINUX ROADBLOCK: NOT ENOUGH APPS

For now, it's mostly used as a specialized, departmental server

BY DAVID ORENSTEIN

LARGE corporations are using Linux for Web, file-and-print and E-mail servers, on development workstations and to ruo custom applications that don't require more than a simple interface.

Users said the Unix variant has demonstrated good reliability and performance, not to mention the fact that the operating system, development tools for it and applications such as the Apache Web server are free or nearly free.

In the past month, major vendors such as IBM and Hewlett Packard Co. have announced the industrial-strength support Linux had previously lacked, a trend that will continue at the LinuxWorld Conference & Expo in San Jose, Calif., this week.

But for Linux to reach its full promise, more applications are needed, users and analysts said. For now, Linux is most commonly used as a specialized, departmental server for scores or hundreds of users. One of the largest Linux installations to date is at Cisco Systems Inc. in San Jose, where 117 Linux servers handle roughly 200,000 print jobs per day for about 30,000 users, said Ben Woodard, print systems manager.

Rollout at $1.8B Retailer

At Burlington Coat Factory Warehouse Corp. in Burlington, N.J., Linux will run the $1.8 billion clothing retailer's in-store systems [CW, Feb. 15].

CIO Mike Prince said Linux could also become the client and server operating system for the company's new warehouse, which is moving from terminal-based to Web-based applications.

But the company will stick with Windows NT where knowledge workers require desktop applications such as Microsoft Excel and Word that aren't available on Linux.

"The people who spend most of the day using various productivity applications will stay with PCs," Prince said.

At the highest end, where corporate data is stored and manipulated, the retailer is sticking for now with Sequent Computer Systems Inc. Unix servers.

Hundreds of Linux computers can be linked to form powerful parallel processing systems, but software that eases or automatically manages load balancing is only now being developed by vendors such as Pacific HiTech Inc. in Oakland, Calif.

The new Linux kernel Version 2.2 enhances Linux's ability to use more than one processor to execute code at the same time, but commercial Unix releases can do more. Sequent's Dynix/ptx 4.4.5 can support up to 64 processors.

The lack of applications extends beyond desktop software. Bruce G. Bartolf, vice president of information systems at the San Francisco architecture giant Gensler Inc., wants to use an application called Samba to make Linux act as an NT or file server. Linux could be useful in field offices of 50 or fewer people that lack informatinn technology staff because it boasts better remote management capabilities than Windows NT, Bartolf said.

But with no native agent for Linux, the file-backup application ArcserveIT can't run in the background while the server is running. Linux comes with its own backup utilities, but Bartolf said he doeso't want to train his staff to use both.

Bartolf also wants to link the company's 1,750 computers to distribute the load of rendering three-dimensional designs.

Installing Windows NT on every computer could cost hundreds of thousands of dollars, but Linux would cost thousands at most. But the computer-aided design rendering program Bartolf needs, Autodesk Inc.'s 3D Studio Rendering Engine, doesn't run on Linux.

Even if it did, Bartolf would have to remove the current Windows applications or make users' PCs dual-bootable. Bartolf said his users might part with their Windows applications for Linux applications with fewer functions.

But they're the exception, said Mary Hubley, research director at DataPro, a Gartner Group Inc. unit.

Linux Rules

How Linux is being used by companies:

HARDWARE USE	
Servers	92%
Workstations	86%
Desktops	70%
Embedded	9%
Handhelds	4%
APPLICATION USE	
Web server	89%
E-mail	84%
Web access	81%
Development	80%
Specialized software	52%
E-commerce	24%

Base: Web-based survey of 1,017 Linux users

SOURCE: DATAPRO, A UNIT OF GARTNER GROUP INC., STAMFORD, CONN.

Red Hat CEO Touts Linux and Choices

Any other Unix version, he says, is like 'a car with the hood welded shut'

Robert Young, CEO of leading Linux vendor Red Hat Software Inc. in Research Triangle Park, N.C., recently made his case to *Computerworld* reporter David Orenstein about his views concerning the value of Linux's open source code model and how Red Hat will offer support for the Unix variant.

On the importance of open source code:

Most of the time you don't need the source code and you never want to look at it.... The question becomes one of "Would you buy a car with the hood welded shut?"....

The point is that the very act of being able to open the hood of your car means that, yes, you can take that car back to the dealer, to the manufacturer, for repairs and oil changes and everything else, but you don't *have* to take it back to them....

In the Linux space, it's exactly the same principle.

If Red Hat won't fix the Red Hat Linux [operating system] that you're using, you've got one of 10,000 other Unix support organizations across the country....

You don't need us to be around in five years. You're getting a complete source-code license.

On Red Hat's support model:

Our intention is largely to sell it on a wholesale basis. [We'll] sell it to the Hewlett-Packards and the IBMs. [We'll provide] official Red Hat Linux support to their customers.

If they want us to, we'll support their customers directly, depending on who their customer is. [Consider] the example of [Fermi National Accelerator Laboratory] in Chicago. They centralize their support, so they actually have a system-support team [that] provides support to the 1,000 or so ou-clear physicists working there.

So when we provide support to Fermilab's support unit, we are wholesaling support to their support team.

On Red Hat's infrastructure:

We're up to 50 members of our direct commercial support team.

Red Hat has recently moved into five times the office space we had in December — 60,000 square feet.... We expect to be doubling the size of our support organization every six months at the current budget, but we may have to scale it even faster.

On Linux and the PC revolution:

I used to sell Digital Equipment Corp. minicomputers in the late '70s.... It was a closed system. What the PC did is it suddenly gave control ... back to the consumer.... It created a huge amount of confusion and anarchy.

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BRIEFS

Multiple Platforms

VMware Inc. has developed software designed to let standard desktop PCs run multiple operating systems simultaneously.

According to the Palo Alto, Calif., company, the product, also called VMware, will include virtual machines for Windows NT, NetWare, Unix and Linux.

Any combination of those operating systems could be installed on a desktop.

The product is set for beta testing this month. Pricing wasn't available.
www.vmware.com

GSA OKs PeopleSoft

According to PeopleSoft Inc. in Pleasanton, Calif., the U.S. General Services Administration has certified a version of its financial applications tailored to education and government users for purchase by federal agencies.

PeopleSoft's announcement came a week after a similar certification disclosure by German application rival SAP AG [CW, Feb. 15].

Salary Survey

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Adonix ERP Suite

Adonix Transcomm, a French developer of packaged applications for midsize users, said it plans to release a new enterprise resource planning suite by midyear.

Adonix X3 combines the company's flagship financial applications with manufacturing and order-fulfillment packages acquired from other vendors. The modular system will run on both Unix and Windows NT servers, said Adonix, which has U.S. headquarters in Pittsburgh.
www.adonix.com

App Links to HR

Lexington, Mass.-based Restrac Inc. is shipping Restrac Hire Link for SAP R/3 Solution. The software links Restrac's recruiting and hiring software with SAP AG's human resources system. Pricing ranges from $15,000 to $75,000, depending on the number of employees.
www.restrac.com

Remedy CRM Tools

Remedy Corp. has announced its Customer Relationship Management Solutions suite for managing three stages of external customer support.

According to the Mountain View, Calif., company, the suite includes modules for technical support, product quality assurance and telesales. The three applications share a customer-information database. Each application costs $15,000, plus $1,600 for each seat.
www.remedy.com

Appsource Upgrades OLAP Software

Appsource Corp. is shipping Wired for OLAP 4.0, online analytical processing software with a Web-based front end. The software works with data repositories that can reside on a relational database management system such as Oracle Corp.'a Oracle8, according to the Orlando, Fla., company. The new version adds support for SQL OLAP services.

The server costs $12,500; client pricing starts at $100.
www.appsource.com

Tool Lets Users Answer Own PC Questions

BY BARB COLE-GOMOLSKI

Software from Austin, Texas-based Motive Communications Inc. aims to cut the costs of software support by linking up end users and support engineers via a Web-based, collaborative system.

The goal is for end users to tie in to knowledge bases set up by information technology departments, use the software to perform diagnostics on their PCs or collaborate electronically with support engineers if they need expert help.

For example, a worker who gets an error message from a contact manager could click an icon and browse an intranet for information on the application. If need be, he could click a button to initiate a support request.

The software then would run local diagnostic programs and collect data about the end user's system. Finally, it would either guide the user to the right content or automatically make the repair.

Using what the company calls Motive Maps, a help center would specify its support processes.

For example, support engineers may have a common set of questions to ask when a user calls with a query about Lotus Notes. Motive Maps record the configuration of users' PCs, which eliminates the need for routine questions and allows the application to automatically fix common problems.

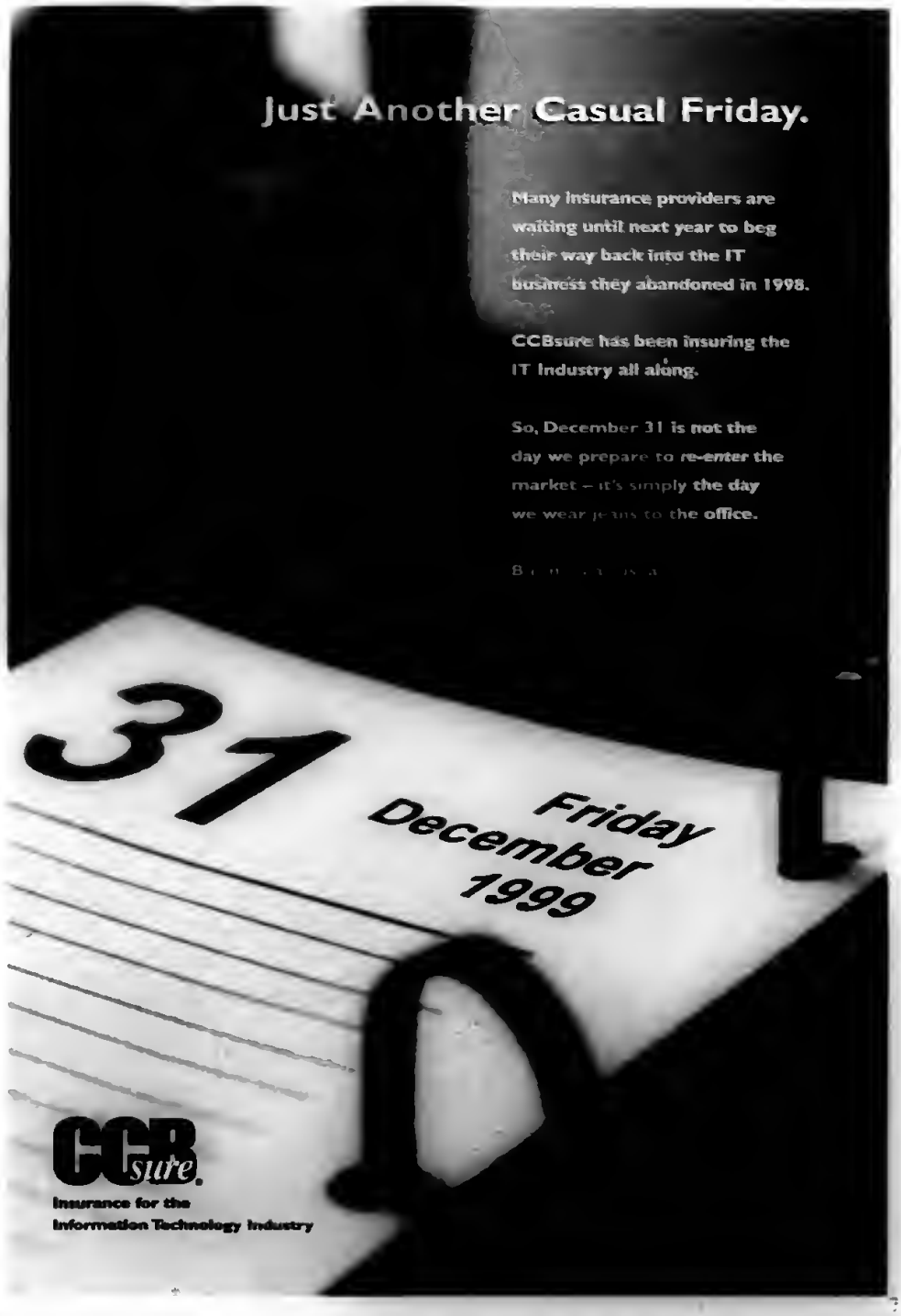
Pilot users said the development of the maps takes a lot nf time, although they can be designed remotely and updated at the server. Merrill Lynch & Co. plans to roll the system out to about 25,000 employees in hranch offices. Today, those workers contact the help desk by phone and might speak to multiple staffers.

"That can be frustrating because frequently the user has to repeat some of the information," said Adam Schoenfeld, Merrill Lynch's director of platform and infrastructure design. Motive will preserve information gathered by the original call-taker and track steps taken to correct problems, he said.

Though Motive focuses on cost savings, Merrill Lynch looks forward to freeing up support engineers to assist users with advanced applications, Schoenfeld said.

Motive Duet, priced at $100,000, consists of a transaction server that runs on Microsoft Corp.'s Windows NT and a gateway that links it to many popular help desk systems. There also is a component that runs on end users' desktops and one that runs on engineers' workstations.

The company also recently released the Motive Duet Self-Service Engine, a $75,000 component that can sense and respond to end users' problems or guide them to the appropriate fixes on an intranet ◗



BRIEFS

IBM Develops Combo Chips

IBM announced last week that it now can place logic and memory circuits on a single silicon chip. The microprocessors will be available in April, the company said. The innovation could reduce the number of chips needed in handheld devices and cellular phones, allowing such devices to shrink in size.

NEC to Ship 8-Way NT Server

Packard Bell NEC Inc.'s Computer Systems Division in April will begin shipping an eight-way Windows NT server called NEC Express5800 HV 8600. The server will include eight 400-MHz Pentium II Xeon processors from Intel Corp. as well as the NEC Aqua II chip set supporting 64-bit Peripheral Component Interconnect technology, the vendor said. Pricing starts at $79,366.
www.neccsd.com

Sony Tape Drive Targets Workstations

Sony Corp. this month will begin shipping its Sony DDS-4 tape drive, aimed at workstations and small-network backups. The digital audio tape drive will work with 20G-byte tapes that hold a maximum of 40G bytes with compression, Sony said. The product works with Windows 98 and NT 4.0. The tape drive costs $1,495.
www.sony.com

ViewSonic to Offer Large Flat-Panel

ViewSonic Corp. has announced an 18.1-in. digital flat-panel display, the VPD180 View Panel. The monitor's 8-bit panel can deliver up to 16.7 million colors, according to the Walnut, Calif., company. It offers two Universal Serial Bus ports for peripherals. The panel is set to ship in the second quarter and will cost $3,995.
www.viewsonic.com

IBM SAN PLAN PUTS FIBRE CHANNEL BACK IN FOLD

High-bandwidth initiative signals shift in Big Blue's technology stance

BY NANCY DILLON

Although IBM invented Fibre Channel, during the past few years the company has championed another high-bandwidth storage interface called Serial Storage Architecture (SSA).

Now, IBM is welcoming Fibre Channel back into its enterprise fold with the recent announcement of a Fibre Channel-based storage-area networking (SAN) initiative.

SSA and Fibre Channel both offer improvements over traditional SCSI in bandwidth and connection distance.

Fibre Channel today is a bit faster than SSA, but SSA is less expensive, and it can handle multiple I/O operations in parallel.

Devices on a Fibre Channel loop must negotiate among themselves for access.

"Fibre Channel is becoming the de facto standard, so even though IBM might believe SSA is superior, it would be hard to ignore [Fibre Channel]," said John McArthur, an analyst at International Data Corp. in Framingham, Mass.

Enhancements

The recent IBM SAN announcement included a souped-up version of a Fibre Channel RAID array introduced last summer and a new SCSI-to-Fibre bridge.

Fibre Channel vs. Serial Storage

	FIBRE CHANNEL	SSA
Total bandwidth	200M byte/sec.	80M byte/sec.
Maximum transmission distance	10km	10km
I/O	Devices arbitrate for access	Multiple I/O operations can occur in parallel

A SAN connects servers and clients to a pool of shared storage. It comprises servers, external storage, networking devices and a high-speed interface such as Fibre Channel.

The upgraded RAID array can house between 18G bytes and 1T byte and was designed to support single-platform server clustering.

The original version supported only IBM Netfinity servers, but the upgrade can attach to dual Windows NT servers or multiple Unix servers from IBM, Hewlett-Packard Co. or Sun Microsystems Inc.

The new IBM Storage Area Network Data Gateway can connect SCSI-attached disk and tape — such as IBM's Versatile Storage Server or its Magstar tape libraries — to select Fibre Channel-enabled Unix and NT servers.

Raj Murthy, information technology manager at Indiana University of Pennsylvania in Indiana, Pa., installed the IBM Fibre Channel RAID Storage Server in December to support a two-node Windows NT cluster and about 5,000 end users.

"It seems the ... market is going in the direction of Fibre Channel, so we wanted to invest in something with longevity," Murthy said.

Fibre Channel's support for long-distance connections also was important because he soon will have to move the array into a closet that's 150 feet from his NT cluster.

SCSI systems support transmission distances only up to 75 feet.

NEC MILLENNIUM BLURS THE LINES

Packard Bell NEC Inc.'s Computer Systems Division has announced a desktop/notebook hybrid, code-named Millennium. The computer includes a flat-panel display that measures 10.5 in. by 7.7 in. by 2 in. The Millennium PC will include a Pentium III processor from Intel Corp., PC Card slots and a detachable LCD screen. NEC said the product will ship this year and will cost about $2,000.
www.neccsd.com

Hitachi, Palm Add Handhelds

Palm seen girding for CE onslaught

BY TOM DIEDERICH

Palm Computing Inc. and Hitachi America Inc. last week announced a new round of handheld offerings.

Palm's latest products have enhanced LCD screens.

The Palm IIIx organizer, with twice the memory of older Palm models, is aimed at users who need increased storage capacity.

The Palm V comes in an ultrathin package with new features that include a rechargeable battery and a full line of matching accessories, the Santa Clara, Calif.-based company announced. The Palm IIIx and V cost $369 and $449, respectively, and are now available.

Hitachi announced the HPW-600ET, a tablet-style, handheld PC with touch-screen display based on Microsoft Corp.'s Windows Handheld PC Professional Edition Version 3.0.

The HPW-600ET is aimed at mobile users. Hitachi said the unit, which will cost $1,199, will go on sale late in the second quarter.

Jack Gold, an analyst at Meta Group Inc. in Westboro, Mass., said handheld market leader Palm is preparing to face a surge in competition from Microsoft Windows CE-based devices.

Win 2000 Upgrade May Take Two Years

Analysts advise NT customers to start planning now for Active Directory

BY SHARON GAUDIN

Microsoft Corp.'s Windows 2000 may not ship until at least year's end, but if you're planning to implement it, you better start now.

Industry watchers say it will take that long to switch file systems and domains over to handle the new Active Directory in Windows 2000.

The challenge is moving from the flat-file system which stores user, device and application information in Microsoft's Windows NT 4.0 to the hierarchical file system, which stores that information in the Active Directory.

The directory, which is made up of files listing user information, services and devices connected to the system, describes not only the users who can be linked to a server, but also the applications and application services the server can provide.

Tough Move

It's difficult to move from flat files to a hierarchical file structure and from small domains to large domains because the administrator needs to ensure that data is defined the same way and that the same symbols are used to represent specific features in both systems.

The administrator also must ensure that a change made to a domain which sits higher in the tree will trickle down to other domains.

Some analysts are advising large companies to give themselves 18 months to two years to make the switch. That timing might work well, because Windows 2000 is slated to ship at year's end, and most analysts are advising their customers not to upgrade until the first service pack comes out, which is generally about six months after the initial release.

"NT is the cornerstone in our environment," said Jorge Muxica, desktop technology manager at CVS Pharmacy Inc. in Woonsocket, R.I. "We are definitely going to need somebody to look at our system, reconfigure it and make sure in the end that it's up to par.... We'll probably have one person, maybe two, on that job."

Tools Shortage Adds Risk

Analysts say there are few, if any, tools to help customers with this move. But they hope that Microsoft or a third-party vendor will come out with tools to make the process easier.

Brian McGuire, a vice president at Econometrics Inc., a Chicago-based database marketing firm, said he will focus on moving to an Active Directory format once Windows 2000 hits the street. "Why worry about it now?" he said. "We'll take care of it when the time comes."

Bill Peterson, an analyst at International Data Corp. in Framingham, Mass., said most information technology managers should be worried about the move unless they have a lot of experience building directories. He said it's scary to get started, but it will be scarier if they don't.

AT A GLANCE

Get Ready

Things you can do to prepare for the Active Directory in Windows 2000:

- Educate yourself and your IT staff on how it works and how to fix it
- Start mapping out domains
- Map out a plan for deploying servers and focus on incremental changes

SOURCE: ABERDEEN GROUP INC., BOSTON

NETWORK AUDITOR FINDS Y2K SNAGS

NetSuite monitors compliance of hubs, updates database

BY STACY COLLETT

A CONCORD, MASS., software firm has stumbled onto what observers said may be the best stand-alone year 2000 remediation product for network infrastructure.

Didn't know your infrastructure carried potential year 2000 problems? You aren't alone. While companies have been bogged down with applications compliance issues, many have ignored year 2000 threats to their hubs, routers and switches. About 30% of LANs could suffer total system failures if left unrepaired, according to Gartner Group Inc., a research firm in Stamford, Conn. (see related story, page 40).

"If you're looking to [make year 2000 infrastructure changes], and you haven't started yet, this type of software is the faster way to go," said Neil Rickard, an analyst at Gartner.

Switches, hubs and routers that don't appear to have date-change requirements might have internal date dependencies in their operating systems that can cause complete failure, according to Gartner. For example, network services, such as firewalls, can also be affected if the operating system running on the server isn't year 2000-compliant.

Equipment software errors	• Total LAN failure • Total failure only when reset • Ports disabled • Management access denied
Network services errors	• Authentication: Remote users can't dial in • DHCP: Users can't access applications • DNS: Applications become unreachable
Attached systems errors	• Congestion, performance degraded • Total LAN failure

SOURCE: GARTNER GROUP INC., STAMFORD, CONN.

NetSuite Development Corp. launched its product as a series of network auditing and design tools. But it quickly morphed into a year 2000 compliance tool after executives realized the audit database that holds specifications for equipment from 190 manufacturers also could include year 2000 compliance information for each device.

NetSuite monitors each manufacturer's compliance changes and updates the database every six to eight weeks. "What you did last summer may not be compliant this summer. That's what's attractive about the NetSuite tool," said Ellen Carney, an analyst at Dataquest in Lowell, Mass. She said manufacturers may change year 2000 compliance standards every few months.

After auditing the network, the software gives a text report on every device, including embedded devices in hubs and routers.

NetSuite competitors like Opticom Inc. in Manchester, N.H., have a year 2000 assessment product, but Opticom users also need Cabletron System Inc. Spectrum's enterprise manager to automatically inventory all devices in the network.

Avico Inc., a systems integrator in Northbrook, Ill., used NetSuite to audit 30 clients. Each one found glitches in its infrastructure — and half the glitches were found where companies already had checked.

"Two-thirds of those companies have or will buy the software," said Robert Schell, president of Avico. "The other third will use it through a service bureau."

BRIEFS

Edging Upward

Worldwide router revenues

PERIOD	REVENUE
Q4 1998	$1.492B
Q1 1999	$1.528B*
Q2 1999	$1.567B*
Q3 1999	$1.617B*

*Projected

SOURCE: DELL'ORO GROUP, PORTOLA VALLEY, CALIF.

Symantec Help Desk Tools

Symantec Corp. last week announced Norton HelpDesk Assistant 1.0, a help desk software tool that lets information technology departments control remote desktops. An integrated version of Norton Utilities provides crash protection, registry repair and disaster recovery utilities, according to the Cupertino, Calif., company. HelpDesk Assistant costs $115 per node for 100 nodes.
www.symantec.com

Windows Web Auditor

Active Concepts is shipping Funnel Web 3.0, Windows Web auditing software. According to the Victoria, Australia-based vendor, users can control the new version remotely. A new event-messaging and notification feature lets organizations monitor their Web site for specific events such as user accesses and download limits. Funnel Web 3.0 prices range from $249 to $499.
www.activeconcepts.com

Sharing an Internet Connection

MiraLink Corp. last week announced the Nshare Internet Connection Expander, software that lets multiple users share one Internet connection without a network router.

The software accomplishes this without reducing Web page loading or application downloading speeds, according to the Salt Lake City company. Prices for Expander range from $39.95 to $99.95 per computer.
www.miralink.com

HALLMARK GUARDS OWN VIRTUAL NET

Believes security will improve, costs will stay flat

BY MATT HAMBLEN

As network security providers push to manage security for the growing virtual private network (VPN) needs of big companies, it might seem odd that Hallmark Cards Inc. recently ditched part of its VPN contract.

Kansas City, Mo.-based Hallmark instead purchased its own VPN security software, which will be installed and maintained by an in-house information technology staff, belying vendor claims that VPN security is too complicated for insiders to keep updated against the constant threat of hackers.

A VPN is a collection of secure links over the Internet that is usually much less expensive than the dedicated data lines used by many businesses. For a year, AT&T Corp. provided Hallmark a flat-rate VPN service. But this month, AT&T will begin providing only network access and manage the company's modem banks, Hallmark officials said.

"We brought security inside because we want to control this thing," said James Miller, vice president of IT at Hallmark, a privately held company with $4 billion in annual revenue. "We have to protect the crown jewels."

By August, about 12,000 Hallmark salespeople in North America will use the VPN to reach Hallmark headquarters for making orders and consulting inventory. They will pass through security from Shiva Corp.'s VPN Client digital certificatioo software, Hallmark officials said.

Costs Are Comparable

The cost of the Shiva software and in-house installation and management will be about the same as the cost of security provided by the AT&T VPN, Miller said.

The technical difficulty of running a VPN from the inside and the need to stay current on hacking techniques are reasons AT&T and other providers offer fully managed VPN services, analysts said.

For example, to manage Shiva's VPN Client, a company would have to install the client software as well as the VPN Gateway Access Switch at its headquarters.

The client uses the IP Sec security protocol for tunneling encrypted data to the switch, which decrypts the data with the help of a certification authority either inside or outside the company. Managing all the connections and keeping the system running for thousands of simultaneous users gets complicated.

But Miller said he has confidence in the security proficiency of his IT staff — which has been instructed to be conservative about password access. Hallmark's security demands will not be as great as those of a bank, even though access is provided around the clock and will be monitored from Hallmark's data center, Miller said.

Corporate VPN use is expected to grow because the public Internet and Internet Protocol networks are less expensive than dedicated networks. With that growth, vendors' security offerings for in-house VPNs are expected to mushroom as well (see box).

Customers "will be companies not wanting to hand off any portion of authorization and security, who will want as much control over it as possible," said Kiran Narsu, senior analyst at Giga Information Group Inc. in Cambridge, Mass. "They are trying to protect the keys to the kingdom."

Narsu said the trend toward doing the task in-house is just beginning, partly because the VPN software packages are "immature." Customers will also find that the cost savings being offered by service providers "are not as aggressive as everybody thinks."

Pricing for an average VPN security software package for a large customer will start at $30,000, he said.

VENDOR	PRODUCT
Shiva Corp. (merging with Intel Corp.) *Bedford, Mass.*	Shiva VPN Client
Check Point Software Technologies Inc. *Redwood City, Calif.*	VPN-1
Nortel Networks *Brampton, Ontario*	Contivity Access Switch
VPNet Technologies Inc. *San Jose, Calif.*	VSU series
Radguard *Mahwah, N.J.*	CIPro

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www.computerworld.com/more

Software building blocks for Web Self-Service apps

WebSphere Application Server *combines a Java servlet runtime environment with connectors to databases and object request brokers. So you can bake existing business functions right into your site.* WebSphere Studio *helps you create servlets in record time.*

Lotus Domino Application Server *lets you build collaborative workflow applications for rapidly changing business processes. Domino supports secure, highly interactive Web Self-Service solutions.*

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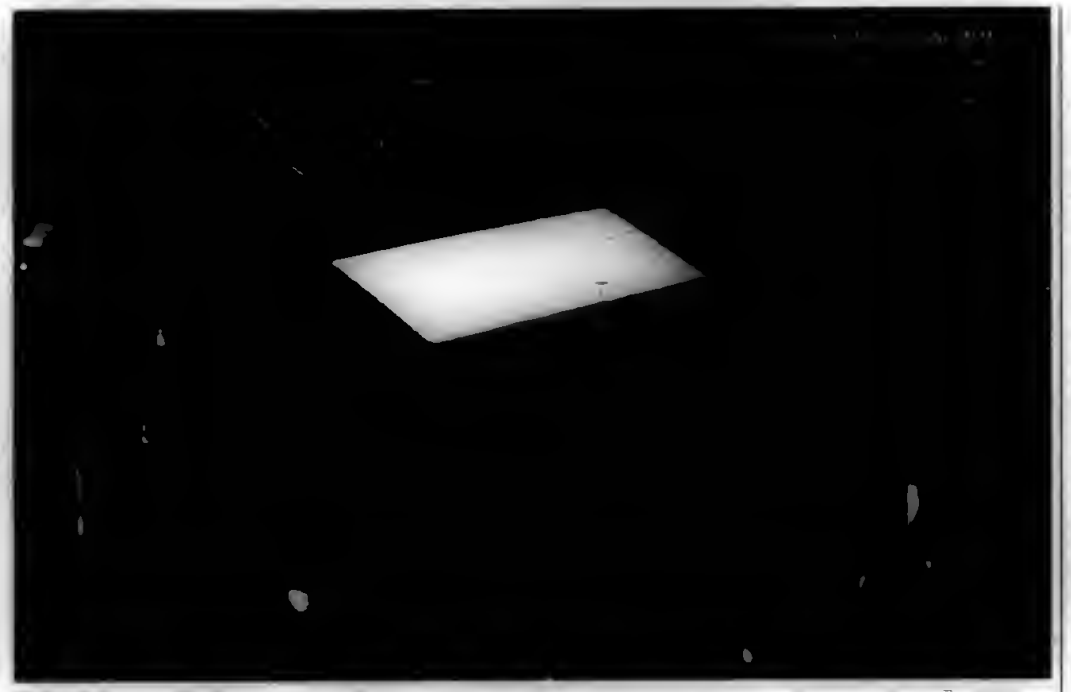


Wising Up on 'Smart Materials'

Tiny processor/transceivers soon may do everything from increasing data storage to earthquake-proofing buildings

BY GARY H. ANTHES

SMART TIRES. Smart skis. Smart paint. Even smart dust. Computers are going everywhere, it seems. Tiny systems of sensors, actuators, processors and communication devices — loosely called "smart materials" — are finding their way into places that may radically alter the way people interact with the physical world.

"We are seeing the end of inert matter," asserts Paul Saffo, a director at the Institute for the Future in Menlo Park, Calif. "We'll put computers into things nobody ever thought of before." Smart matter often contains micro-electromechanical systems (MEMS), tiny devices at the intersection of material and computer science. Some of them are likely to come to the aid of information technology professionals.

For example, Kionix Inc. in Ithaca, N.Y., is working on high-density data-storage devices that will put more than 1,000 read heads on a device that's just 1 cm square and 1 mm thick. A tiny "probe" rides so close to the data it "feels the intermolecular forces," says Timothy Davis, research vice president.

In about 18 months, the first working prototypes will be able to store 60G bits per square inch — 15 times the capacity of today's hard disks — and will scale to hundreds of times that density, according to Davis and others. Commercialization should follow in three to five years, he says.

Hewlett-Packard Co. also is developing high-density probe storage devices, according to HP researcher Charles Morehouse. "The emphasis is on portability, low power and small size," he says. "But we don't know what they will cost. No one does."

In a project at the University of California at Berkeley, researchers are working with major disk-drive makers to boost the storage density of conventional disks to as much as 40G bits per square inch, about 10 times what's possible today. That will be enabled by read/write heads positioned with unprecedented accuracy by MEMS devices riding on them. A working prototype has been built, says a spokeswoman for the Defense Advanced Research Projects Agency, which is partially funding the work.

A key goal of MEMS is to move complexity from physical matter to computation, according to John Gilbert, manager of computation and matter at Xerox Corp.'s Palo Alto Research Center (PARC) in California.

Unlike mechanical parts, software never wears out and can be replicated at virtually no cost. For example, PARC is perfecting a technique for moving paper through a printer on a cushion of air, eliminating many of the belts and pulleys now needed. A 1-square-foot "active surface" has 600 tiny air jets, 15,000 sensors and a number of processors embedded into it.

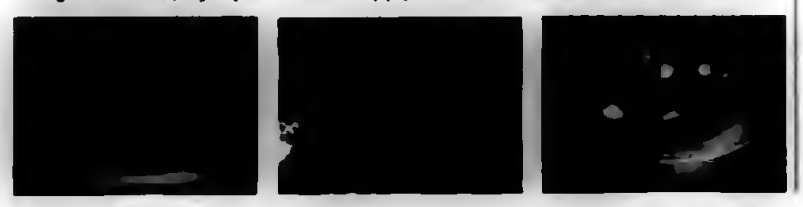
Conceptually simple, such "meso-scale" MEMS are a huge challenge for computer science, according to Gilbert. Because the amount of data produced is so large and so distributed, he says, it taxes the limits of our understanding of control theory, parallel algorithms and fault tolerance.

For example, it wouldn't be hard to let machines — say, cars or printers — diagnose their own malfunctions by sprinkling "smart dust" (see story below) over them and having the dust analyze every noise and vibration.

"But now you're getting huge amounts of data — hundreds of thousands of bits per second from each of thousands of sensors," Gilbert says. "How do you analyze all that data fast enough to act on it?"

Anthes is Computerworld's editor at large. His Internet address is Gary_Anthes@computerworld.com.

Putting MEMS to work, tiny air jets and sensors help paper float across Xerox PARC's "active surface"



Smartifacts

Intelligence is showing up in some strange places lately. For example:

- Japanese scientists have developed a paint that senses vibrations and sends electrical warnings of impending structural failure.
- Goodyear Tire & Rubber Co. in Akron, Ohio, is developing a truck tire with an embedded chip. It radios tire pressure, temperature and historical data useful for maintenance to the driver. Because the chip is inserted early in the manufacturing process, each tire can shape its own destiny by directing factory routing, machine controls, warehousing and repair.
- Xerox has tripled the strength of a metal beam by fitting it with microscopic sensors and actuators. As the beam is stressed, instructions for counteracting the stress forces are fed back to the actuators by computers. That could keep a building intact during an earthquake.
- The University of California at Berkeley is developing "smart dust" – a sensor, laser communication device and power supply in a package the size of this "o" at a cost of as little as 10 cents.
- UC Berkeley researcher Kristofer S. J. Pister also is developing "synthetic insects," which are – what else? – "basically smart dust with legs," he says. And possibly wings. "Say you've got a bombing or earthquake and you're looking for survivors," Pister explains. "It would sure be nice if you could have thousands of little synthetic insects running around looking in places that you can't get to."

– *Gary H. Anthes*

Scanning for bargains

BY CHRISTOPHER LINDQUIST

NO LONGER a task reserved for art and document management departments, scanning is breaking in to the mainstream. With prices dropping rapidly, executives may find scanners worth having by their desks, whether it be for digitally recording a business card or contract, adding an update to the intranet or simply scanning in a child's photo for use as a desktop screen saver.

Regardless, most executive uses require taking printed documents and putting them on a screen — often the corporate intranet. "Even the inexpensive scanners probably provide more resolution than you need" for that purpose, says Rob Enderle, vice president in charge of desktop and mobile technology at Giga Information Group Inc. in Cambridge, Mass.

And inexpensive scanners are everywhere. Several vendors, including Umax Technologies Inc., Artec/Ultima International and Agfa Corp., have flatbed models that sell for less than $100 — far less, if you shop around. Scanners in the $200 range are starting to offer options such as transparency adapters (which let you scan slides and larger transparent images) and automatic document feeders that previously were reserved for far more expensive devices.

Add another hundred dollars or so to the total, and you can buy a scanner with image quality that will suffice for all but the most serious graphics professionals.

And while prices drop, basic scanner technology keeps improving. Even the least-expensive models scan with enough color depth and resolution for most uses. Scanners with Universal Serial Bus (USB) connections — which started to arrive this past year — don't take up printer ports or require an SCSI card. And though most desktop scanners use reliable but relatively delicate Charge Coupled Device scanning technology, upcoming Contact Image Sensor models promise to make scanners smaller and tougher (see story at right).

The following is a review of a scanner that goes beyond the basics, and a review of one that won't break your budget. ▶

Lindquist is a freelance writer in Moss Beach, Calif.

ARTEC'S AM12E PLUS meets all your basic scanning needs for a low price

HP ScanJet 6200C

Hewlett-Packard Co.
www.scanjet.com
$399

Hewlett-Packard isn't known for building the least-expensive scanners on the market, but it does build good ones, and the ScanJet 6200C is a prime example.

Installing this 36-bit, 600-dpi resolution color scanner was a snap. The included setup poster lists a quick six steps, and the USB connection meant an time wasted installing an SCSI card (an SCSI model is available, if you prefer).

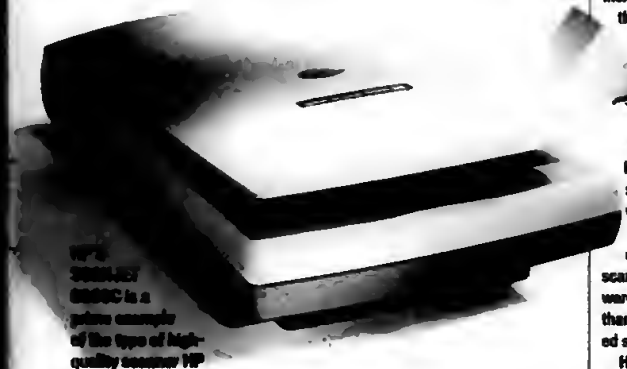
Dropping the software CD-ROM into the drive started a simple installation process that took 20 minutes.

Unlike some less-expensive scanners, HP offers extra features, including a power saver that shuts the scanner down after 10 inactive minutes and the option to share the scanner over a network.

Once it's installed, you won't be unhappy with the scanner's output. It performed admirably, producing sharp text and bright graphics without manual image tweaking.

The included slide adapter even let me take acceptable scans of color slides (though they were darker and far less-detailed than those scanned with a dedicated slide scanner).

HP bundles the scanner with a suite of scanning tools, including a file manager, an image editor and optical character recognition (OCR) software.



HP'S SCANJET 6200C is a prime example of the type of high-quality scanner HP produces

Artec ViewStation AM12E Plus

Artec/Ultima International
www.artecusa.com
$99.95

The most amazing thing about this product is its price. The Artec ViewStation AM12E lists at a mere $99.95 for a 36-bit, 600-dpi resolution color scanner, complete with all the software you need for basic scanning tasks.

Simply attach the AM12E Plus to your parallel port (it includes a pass-through so you can still use your printer). Plug in the AC adapter. Install the software, which includes device drivers, TextBridge Classic 2.0 OCR software, the Ixla Photo Scanner Suite, a photo editor and an online manual. Reboot your system, and you're set.

Unlike some inexpensive scanners, the AM12E Plus is relatively quiet. It isn't fast enough for production work, but it's more than sufficient for scanning the occasional image.

The scanner's configuration software offers a wide array of options to help tweak images – everything from color depth to resolution to hue and saturation to color levels. A button on the front lets you prescan, or scan and print, documents.

If you want an easy-to-use, inexpensive scanner for creating Web pages or noncritical business documents, the AM12E Plus will deliver.

Scanner Tech Wars

Although most scanners today use Charge Coupled Devices (CCD) at their core, Contact Image Sensor (CIS) models are starting to appear on the market.

CCD scanners are "optical reduction" devices. They reduce the original image with lenses and then send it to a light-sensitive CCD for conversion to digital format. With high-quality optics, CCDs provide exceptional results, even if the original isn't completely flat. But those optics rely on perfect focus, making CCD scanners prone to damage.

CIS scanners skip the sensitive optics. Instead, a row of lights (often light-emitting diodes) and sensors pass directly over the original document. Such scanners can be extremely small, light and durable. Current models tend to produce less-detailed images than CCDs, and they have trouble with documents that aren't totally flat.

CIS technology isn't new, but it's just finding its way into mainstream scanners. Look for it to improve dramatically in the coming months.

– Christopher Lindquist

BRIEFS

Sun Revamps C++, Fortran Tools

Sun Microsystems Inc. has released Version 5.0 of its Workshop development tools for C++ and Fortran. The tools support 32- and 64-bit development for Sun's Solaris operating system. Personal user licenses start at $1,895.
www.sun.com

Microsoft Developer Site

Microsoft Corp. is beta-testing a developer-oriented Web site that will combine its Microsoft Developer Network site with the SiteBuilder Network site.
msdn.microsoft.com/defaultbeta.asp

Single Sign-on Security

New Era of Networks Inc. last week introduced NEONsecure, a single sign-on security product for corporate applications. According to the Englewood, Colo., company, the product gives end users the ability to log on once and access multiple applications. Available now, NEONsecure pricing starts at $150,000 for 1,000 users.
www.neonsoft.com

Who's Buying What

Montgomery, Ala.-based ALFA MUTUAL INSURANCE CO. last week said it's using a high-speed Gigabit Ethernet network based on technology from CISCO SYSTEMS INC. to replace its Token Ring network. The UNIVERSITY OF WISCONSIN last week said it will standardize on CYPRESS SEMICONDUCTOR CORP.'s integrated document and knowledge server to publish, distribute and archive reports campuswide. Queensland, Australia's NATURAL SCIENCES PRECINCT, a research facility, has taken delivery of a Cray SV1 from SILICON GRAPHICS INC. The scalable vector system costs about $2.5 million. BRITISH BROADCASTING CORP. last week said it's now monitoring its Microsoft Exchange-based Internet E-mail system with the AppManager Suite from NETIQ CORP. The BBC averages 30,000 messages per day.

Online-Forms Tool

Kofax Image Products in Irvine, Calif., has introduced Ascent Capture 3, software that lets users capture online forms and data and distribute the information to employees over the Internet. The product is set to ship in the second quarter. Pricing for Ascent Capture 3 starts at $7,500.
www.kofax.com

Clarinet Debuts Wireless LAN

Clarinet Systems Inc. in San Jose, Calif., will announce today a wireless LAN for connecting portable computers to corporate networks. Called EthIRLAN, the system includes EthIR Switch, which is an infrared and 10/100Base-T network switch, and EthIR Beam, a desktop device that communicates with the existing IR port of portable computers. No additional hardware is required. Pricing for EthIRLAN ranges from $1,700 to $3,200.
www.clarinetsys.com

Net Fridge Update

As part of *Computerworld*'s firm commitment to keeping readers current on Internet-ready kitchen appliances [CW, Feb. 22], we can now report that Dallas-based ICL last week unveiled such a device, which it called "the fridge that goes shopping for you," at a New Orleans trade show. Watch this space for further developments.

FRANKLY SPEAKING/FRANK HAYES

How It Really Is

YOU KNOW HOW IT SHOULD BE. The way it's *supposed* to work is that users tell us what they need, and we deliver it promptly. You know how it really *is*, too: Users disagree among themselves about what they want, hide what they actually require and demand things they'll never use. It takes us months or years to deliver half of what they asked for, and that includes only a quarter of what they really needed. But by the time it's delivered, the business has changed — so now they need something different.

Welcome to the reality gap, that all-but-unbreachable divide where all the sensible, insightful, progressive advice is on one side — and all the cantankerous reality is on the other.

How it should be: IT management tracks business needs, plots technical direction, brings developers and operational IT workers up to speed on new technologies and hires consultants for one-time-only specialty work.

How it is: IT management is blindsided by business-side management decisions, top developers bounce from one rush project to the next without any chance for training, and expensive consultants end up performing routine IT work simply because the people who should be doing it are too busy putting out fires.

How it should be: We listen.

How it is: We justify.

How it should be: We keep users updated with fresh technology to provide maximum competitive benefit.

How it is: We keep aging systems going long past their useful life in spite of breakdowns, crashes, fires, explosions — wait, I'm thinking of the Mir space station. Which, come to think of it, at 13 years old is younger than some of our legacy systems.

How it should be: We encourage the use of IT for business benefit.

How it is: We bill for system usage.

How it should be: When a project is clearly failing, it's killed, postmortemed to gain insight from the failure, scavenged for salvageable technology and put behind us.

How it is: Failed projects are kept on life support for political reasons, finally put out of their misery by management changes and ignored as the source of anything useful — so that the same mistakes and technologies can be reinvented at higher cost next time around.

How it should be: Advanced technology maximizes IT productivity while providing a firm foundation for future flexibility.

How it is: Cobol and Visual Basic.

How it should be: As business needs change, we react quickly by updating our systems to match the shifting business environment.

How it is: We still believe in "rollouts" and "major releases," so we respond only occasionally, causing major disruptions while we deliver systems that are already outdated.

The way it's supposed to work is that users tell us what they need, and we deliver it promptly.

How it should be: We select technology based on flexibility, cost, effectiveness, reliability, availability and our experience.

How it is: We're asked to deliver products based on ads, newspaper articles, magazine reviews, trade-show demos and something the CEO saw on CNN (or was it the Sci-Fi Channel?).

How it should be: Technology takes a backseat to business requirements.

How it is: We hire and promote people based on technical skills instead of business experience, we manage projects based on technical requirements instead of business needs, we sneer at nontechnical business people and admire pure techies.

How it should be: We like our users, and they like us.

How it is: Cold war.

How it should be: Business and IT people all understand that technology is a competitive edge and the clock is ticking on every opportunity to put IT in the service of business needs.

How it is: Year 2000. ▶

Hayes, Computerworld's staff columnist, has covered IT for 20 years. His E-mail address is frank_hayes@computerworld.com.

Smart Phones

BY SHARON GAUDIN

THE YEAR IS 2004. A CEO lands at the airport in San Francisco after spending the better part of her workday in the air. While waiting for her luggage, she checks her E-mail, reads her faxes, checks for real-time stock quotes, scans the Web for hotel specials and restaurant listings, then calls for a car to pick her up. All with one device — her smart phone.

Today, cellular phones, pagers and personal digital assistants such as 3Com Corp.'s PalmPilot, which electronically keep track of appointments, addresses and notes, are a common tool for road warriors.

Industry watchers say smart phones will roll these functions into one small, lightweight device.

Next Big Thing

"There are people who live and die by their phones and having access to their data, and this will serve them very well," says Jill House, a research analyst at International Data Corp. in Framingham, Mass. "This is going to be the next big tool. You'll have your laptop and your smart phone."

Depending on the manufacturer, there are slightly different definitions of what makes up a smart phone. But most agree on the basics: A smart phone is, first of all, a wireless phone. It is digital as opposed to analog. Digital technology offers better sound clarity than its wireless predecessor and handles eight times the traffic. That means users will have a better chance of getting their calls through quickly and clearly. Smart phones also support data transmissions; it's that ability to handle text and Internet access that makes a smart phone "smart."

A smart phone also has a built-in mini-Web browser. And as wireless Internet connections get faster, smart phones will even be able to handle streaming video. That means a user in a rental car could put the phone in a cradle and get a real-time video map of his course while a digital voice gives him directions.

"[User] companies are going to be the ones that drive wireless data," says Weston Henderek, an analyst at Cambridge, Mass.-based Giga Information Group Inc. "Right now, there's an extremely high demand for mobile workers on the go to check E-mail and download information. Doing that wirelessly will be a huge business benefit."

Although smart phones are widely used in Europe and Asia, early versions suffer from slow Internet connections. Wireless voice technology hasn't fully adapted to handle data, and the device's dimensions are larger than a cell phone.

But analysts say solving all of that is only a few years away. They all point to 2003 as the year smart phones will take off.

"When we get them out in the market and connection speeds pick up in a few years, a whole new range of things will become possible," Henderek says. "Phones will turn into little videoconferencing devices. It'll be very cool."

DEFINITION

A smart phone is a wireless phone with text and Internet capabilities. It can handle wireless phone calls, hold addresses and take voice mail and can also access information on the Internet and send and receive E-mail and fax transmissions.

BY THE NUMBERS

U.S. Smart Phone Shipments

Shipments will increase when prices come down, wireless voice technology improves and the devices become a bit smaller:

1996	1,000 units
1997	66,000 units
1998*	178,000 units
2002*	1,500,000 units

* Projected

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

AT A GLANCE

Smart Sampling

Some smart phone vendors and what they have to offer:

- **Qualcomm Inc. PDQ Smart Phone**
  Slated to ship in March or April. It's a combination of a mobile phone and 3Com's Palm Computing platform.
- **Nokia Inc. 9000i Communicator**
  Released in late 1997. It's a mobile phone with wireless data capabilities, such as a Web browser, E-mail and data modem capabilities.
- **Motorola Inc. i1000**
  Expected to ship around May. It's a mobile phone with a microbrowser and wireless modem capabilities. It also can act as a two-way radio.

MORE ONLINE

For more information about smart phones, visit our Web site www.computerworld.com/more

Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to QuickStudy editor Stefanie McCann at stefanie_mccann@computerworld.com.

The appeal of ERP may come less from any cash benefits and more from its ability to untangle snarled business practices and systems

By James Connolly

ERP:

SO, YOU THOUGHT ERP was all about tracking factory inventory and crunching paychecks. Well, listen to the opinions of a couple of dozen managers — some who were pioneers in ERP and some who are just launching their implementations — and it becomes clear that enterprise resource planning strategies were really designed to get the corporate house in order.

Computerworld explored ERP user experiences — why they chose their vendors and what types of benefits and challenges they discovered — through in-depth interviews conducted in January by Framingham, Mass.-based Market Data Group.

Yes, better inventory management and faster order processing were on the minds of some people when they set out on an ERP course. But the real benefits most people have been chasing have revolved around matters such as standardizing business processes, building a clean base of data and erasing the complexity, expense and year 2000 problems surrounding legacy systems.

"We certainly didn't do it for performance. We still haven't gotten the performance. What we were doing was tidying up our house, and the year 2000 gave us a deadline," says Julie Peeler, corporate vice president at Aerostructures Corp. in Nashville. Peeler says Aerostructures' implementation of Baan Co. ERP software gave her company new capabilities. "We desperately needed the ability to put data in the managers' hands so that they could have the information to make real-time business decisions."

The managers interviewed included a mix of information technology executives and executives from departments such as human resources and finance. When they were asked to cite the forces that drove their ERP strategy and the benefits they have seen, 13 of the 23 said new ERP systems give them the chance to standardize or improve their business processes. Most mentioned several benefits. They cited lower costs in 11 cases, year 2000 problems in 10 and the need to support corporate growth or market demands in seven.

Below, these ERP managers share their experiences and offer advice for their peers.

Their Vendors

Most managers said they chose the vendor that most closely matched their company's business needs — typically needs defined by financial managers. Some said they found that particular vendors were more focused on their vertical markets, and several said a vendor's corporate stability was a key factor in their decision.

"It enables our users to modify parameters in the operation of the system, minimizing the need to call on technical people for changes. The flexibility enables our company to react more quickly to changing business demands, resulting in a more nimble operation . . . the direction of J. D. Edwards was positive." – **David Mewes**, *vice president and CIO, Champion Laboratories, Albion, Ill.* (J. D. Edwards & Co. user).

"At the time when we chose J. D. Edwards, some of the fundamental applications they had for our industry were head and shoulders above the competition." – **Patrick Thompson**, *vice president and CIO, Turner Industries, Baton Rouge, La. (J. D. Edwards user).*

"The greatest strength is what I call ease of setup . . . the way they market their product to companies with less than $100 million in sales, is with a product called Genesis. . . . It takes a history built by J. D. Edwards and, based on your type of manufacturing company and how you want to do business, it sets a good number of those preferences to historical answers. It saves a lot of time." – **Dennis Vandereplow**, *manager of MIS, SK Hand Tool Corp., Chicago (J. D. Edwards user).*

"One of our lead strategies was to leverage new technology. That was also a PeopleSoft lead strategy. We had heard that the PeopleSoft install process might be easier than some of the competitors." – **Diana Near**, *assistant director information systems, The Principal Financial Group, Des Moines, Iowa (PeopleSoft user).*

"We liked their strategy of focusing one of their marketing groups on the education and government markets." – **Helen Mohrmann**, *director of administrative systems and distributed technology, Cornell University, Ithaca, N.Y. (PeopleSoft user).*

"They are committed to improving their product and adding features. They already had most of the features we were looking for. We've already been able to do a lot with very few modifications." – **Robert Hyche**, *Baan project manager, Progress Rail Services Co. Albertville, Ala. (Baan user).*

"The global presence of SAP. . . . The best-of-breed strategy starts to fall apart when you're dealing with global companies. SAP was willing to modify their product to allow us to bring it up in many different countries all over the world. " – **Peter Burrows**, *chief technology officer, Reebok International Ltd., Stoughton, Mass. (SAP AG user).*

"SAP invests heavily in developing new applications and improving the capabilities of their current product offerings," **Wayne Sylvanowicz**, *program manager, Hewlett-Packard Co. Medical Products Group, Andover, Mass. (SAP user).*

TAMARA REYNOLDS

We . . . didn't do it for performance. We still haven't gotten the performance.

JULIE PEELER, CORPORATE VICE PRESIDENT, AEROSTRUCTURES CORP.

"The company has been in business with a single, consistent vision for 25 years. . . . ability to execute. . . . global support organization." – **Michael Cromer**, *managing director, GATX Capital Technology Services, San Francisco (SAP user).*

"SAP is bulletproof. It has few bugs and is a widely used financial system." – **Sam Precket**, *RFMS manager, Chevron Products, El Paso, Texas (SAP, Indus International Inc., Meridium Inc. and Broadbase Information Systems Inc. user).*

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Corporate Cleanup

Continued from page 75

"At the time, SAP was so far ahead of their competition in two areas . . . breadth of functionality. . . . Their user interface was superior." – **Rodney Rogers,** *vice president and general manager, consumer products, Florida Crystals Corp., Palm Beach. (SAP user).*

"We wanted instant, consolidated worldwide information, and we wanted to manage the system with a single-site support team. In addition to having strong integration in its modules, SAP R/3 is easy to extend with custom Web applications." – **Frank Holland,** *general manager of IT integration and planning services, Microsoft Corp., Redmond, Wash. (SAP user).*

Challenges in ERP Implementation

The ERP project teams tackled a broad spectrum of issues and problems, ranging from PC compatibility issues to management challenges such as selling an ERP plan to the CEO. The most common problems centered on networking issues, knowing when to allow users to modify the packaged software and user training.

"The scope of the project was the largest challenge. To implement a fully integrated suite meant we had to change every application in the company. . . . Our mind-set had to change from our traditional way of doing business: user specification, design, write the application, implementation. We had to become accustomed to buying something 'off the shelf' and using it as it came." – **David Mewes,** *Champion.*

"There had been no standardization among desktop computers. Although it seemed as if we were changing only the accounting system (or desktop), we were implementing a large culture change. We faced a training challenge when we asked people to transition to a Windows 95 environment from DOS." – **Terry Smith,** *IT director, Knight Ridder Shared Services Center, Coral Gables, Fla.*

"Mapping our business and re-engineering model with SAP functionality. We needed to find the way to build a leasing application layer with R/3 architecture without changing a line of R/3 code." – **Michael Cromar,** *GATX.*

"In 1993, SAP resources were incredibly hard to find." – **Rodney Rogers,** *Florida Crystal (SAP user).*

"The need to purchase new hardware — there was no existing [wide-area network]. The need to keep the old system running during the changeover." – **Juan Garcia,** *systems manager, Heads and Threads, Northbrook, Ill. (SAP user).*

"To keep our old environment functional while going forward with ERP." – **Wally Hayes,** *vice president of IT and corporate planning, Kinetico Inc., Newbury, Ohio (J. D. Edwards user).*

It will reduce our year 2000 efforts on our old systems, and we will be fully year 2000-compliant.

KEN DEWITT, CORPORATE IS, SEARS, ROEBUCK AND CO.

"Finding qualified Baan people here was quite a challenge. We have had to move in people from other parts of the country, develop people on our own, recruit younger staff, etc. . . . Communications have also been a challenge. Figuring out how to lay out a wide-area network to handle this." – **Robert Hyche,** *Progress Rail.*

"To do an ERP selection for shared services has its own nuances. The strength of ERP is the integration within the enterprise. But when you're in shared services and dealing with distinct and different business lines, you're dealing with multiple enterprises. That's kind of the myth behind integration. We're trying to make the ERP package fit multiple enterprises." – **Vicky Falk,** *executive director, payroll operations and technology services, Tenneco Inc. (SAP user).*

"J. D. Edwards doesn't really get into [the apparel industry] very well, so we had to put some programming around the system to meet the needs of our company and industry." – **John Lessmeuller,** *director of IT, VANS, Santa Fe Springs, Col. (J. D. Edwards user).*

"Implementing a common business process across multiple brand groups that were considered independent businesses." – **Peter Burrows,** *Reebok.*

"Within higher education, decision-making processes are not as hierarchical as they are in corporations. We needed very strong support from senior management to obtain policy decisions under a deadline." – **Helen Mohrmann,** *Cornell.*

"From an MIS perspective, it was the planning and incredibly long hours. My hat's off to those folks and their families." – **Julie Peeler,** *Aerostructures.*

"Gaining CEO endorsement. . . . Cultural challenges. Our company had not developed software in over 11 years." – **Michael Cromar,** *GATX.*

"Change-management and getting the staff time to effect implementation. We are going from a very comfortable system that everyone knows. . . . When a problem arises, all of us know how to respond to it. Good, bad or indifferent, we are comfortable with it." – **Dennis Vandereplow,** *SK Hand Tool.*

Benefits So Far

Just as the rollouts and modifications will continue for years, some benefits could take years to come together. However, some managers already cite cash benefits — one manager is saving $1 million per month through inventory management — and better management in general.

"We can clearly identify savings . . . because of the negotiation and compliance with nationwide contracts. We saved many dollars and man-hours in avoiding Y2K upgrades. We have fewer people focused on transaction processing at the business units, allowing them to spend more time on reviewing and analyzing financial results." – **Terry Smith,** *Knight Ridder.*

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Fast Facts: Enterprise Resource Planning

ERP DEFINITION

An enterprise resource planning system (ERP) is a packaged business software system that lets a company:

- **Automate** and integrate the majority of its business processes.
- **Share** common data and practices across the enterprise.
- **Produce** and access information in a real-time environment.

– Deloitte Consulting

RESEARCH ON ERP

ERP's Second Wave: Maximizing the Value of ERP-Enabled Processes. This January 1998 Deloitte Consulting study was conducted with Benchmarking Partners Inc. and supplemented by on-site case studies, partner focus groups and actual postimplementation ERP projects. The gist: They predict that hundreds of companies will "go live" this year as they switch off their legacy computer systems and fire up newly installed ERP software.

The report also offers the following Best Practices for ERP's Second Wave:

- **Focus** on capabilities and benefits.
- **Align** the organization on the true destination.
- **Achieve** balanced people, process and technology changes across all areas.
- **Use** the business case as a management tool.
- **Apply** planning and program management practices throughout the program life cycle.
- **Transition** project roles to a way of life.
- **Build** and leverage process expertise.
- **Extend** capabilities beyond the ERP foundation.
- **Promote** postimplementation commonality.
- **Assign** clear ownership of benefits.
- **Define** metrics and measure to them.

NEWSCLIPS

- **Several software vendors** soon plan to release direct links between rival ERP systems, a move that could make integrating applications less of a dirty job for users.

The idea is to provide more out-of-the-box connections for users who need to get multiple enterprise resource planning applications to work together. For example, a company may have to pass employee salary data from PeopleSoft Inc.'s payroll software to SAP AG's accounting module. – *Computerworld,* Feb. 4

- **After years of skyrocketing** revenue and profit growth, ERP market leader SAP AG is getting a taste of what life is like on the wrong side of the financial tracks. The German application vendor two weeks ago disclosed that its pretax profits for the past three months are expected to drop about 15% from the fourth quarter of 1997. And profit growth for all of 1998 will reach only 15% – barely half of the increase SAP confidently predicted as recently as October.

Yet SAP isn't in nearly the same straits as Baan Co., which lost $32 million in last year's third quarter and two weeks ago said it was issuing new stock to an investment firm in return for a $75 million infusion. – *Computerworld,* Jan. 19

- **Some large companies** are considering linking their messaging clients and servers to enterprise resource planning applications to give end users access to isolated financial and employee data.

Several users at last month's Lotusphere '99 conference said they're linking ERP systems with Lotus Development Corp.'s Domino servers to create self-service human resources applications. For instance, American Express Co. plans to link Lotus Notes to the front end of its recently purchased PeopleSoft Inc. human resources system, said Larry Blomquist, a developer at Phoenix-based American Express Technologies, the technology arm of the travel services company. – *Computerworld,* Feb. 2

- **By 2001,** more than 10,000 new ERP installations will have gone live, according to Dean Davison, program director at Meta Group Inc., a leading information technology advisory services firm.

"Many companies with these new ERP systems will consider outsourcing the systems' operation, maintenance, upgrades and support and will be looking for ways to get the full benefits of their investments," Davison added.

– PR Newswire, Feb. 9

Up to the Future

Platinum Software + DataWorks = the new force in enterprise resource solutions.

We've linked our award-winning resources to put even more powerful, customer-centric solutions to work for your business.

Have you heard? Platinum Software and DataWorks, two leading providers of enterprise resource planning solutions, have combined to create the new powerhouse in ERP applications. Our Platinum ERA (Enterprise Ready Applications) suite of products just got stronger, with ironclad robustness for linking sales and marketing, customer care, manufacturing, distribution, financials and budgeting. Its award-winning technology is based on Microsoft® Windows NT® and SQL Server™ 7.0. To learn how our winning combination can help you better serve your customers, call (800) 997-7528, or visit us at *www.platsoft.com*.

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Continued from page 76

"It's still early for this. Data quality and clean up is obvious already. Compliance to customer requiremeots can be seen already. We look different and more modern. We've seen benefits in terms of operational efficiencies and effectiveness. We're achieving Y2K compliance without spending a lot on remediating legacy code." – **Peter Burrows**, *Reebok*.

"Cost savings. For example, $165,000 per year oo salary administration. Technical support staff cut from 12 to five." – **Diana Near**, *The Principal*.

"Reliability." – **Sam Prochet**, *Chevron*.

"Our sales increased two and a half times from the time we started the study through implementation. If we had remained on the legacy system, we would have needed to add at least 20 people in manufacturing, order entry and shipping to support that sales growth. I would estimate that we saved approximately $1 million in 1997, with recurring savings every year." – **Wally Hayes**, *Kinetico*.

"In just the operations group, with the two legacy systems we had . . . it would have cost between [$5 millioo and $7 million] to do an upgrade for the Y2K and over $1 million to do an upgrade for the euro. Second, we are able to really quickly implement a new business model or business stream." – **Frank Holland**, *Microsoft*.

Benefits to Come

The managers generally look at their ERP strategy as setting the stage for efficiencies and profits down the line. In many cases, the expected future benefits extend beyond the reach of their original ERP goals, and often are in tactical rather than strategic areas.

"We will be going to biweekly pay which will have a bottom-line dollar benefit to the company. . . . It will reduce our year 2000 efforts on our old systems, and we will be fully year 2000-compliant. We expect improved productivity based on being able to change our work processes. Reduced training will result in some productivity improvements. It will allow more flexible terms in our accounts payable and things of that nature." – **Ken DeWitt**, *vice president, corporate information systems, Sears, Roebuck and Co., Hoffman Estates, Ill.*

"Ask me a year from now, but I believe I'll say our biggest bang for the buck is going to be the decision-making opportunities that we think we'll have on real data. . . . Now we have one database and one system producing the data. . . . You can slice it differently, but it all comes from the same source." – **Julie Pooler**, *Aerostructures*.

"We will get inventory back more in line. We've achieved some benefits there but not as much as we can. We'll have better forecasting so the sales reps don't have to overforecast to get their orders shipped oo time." – **John Lessmeuller**, *VANS*.

The Gaps

When we asked managers what they want from their vendors, they often said they need cleaner code, fewer upgrades and better support. Beyond those requests sat an undercurrent of calls for additional functionality.

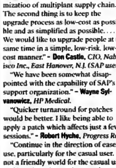
"Because we helped SAP get into the iodustry and create a generally accepted product, the real issue SAP has to deal with is to keep that support going forward. We've created a way for us, ongoing, to get what we want. We basically hired the experts to modify their own product." – **Peter Burrows**, *Reebok*.

"First, I would like to see true optimizatioo of multiplant supply chain. The second thing is to keep the upgrade process as low-cost as possible and as simplified as possible. . . . We would like to upgrade people at the same time in a simple, low-risk, low-cost manner." – **Don Castle**, *CIO, Nabisco Inc., East Hanover, N.J. (SAP user)*.

"We have been somewhat disappointed with the capability of SAP's support organization." – **Wayne Sylvanowicz**, *HP Medical*.

"Quicker turnaround for patches would be better. I like being able to apply a patch which affects just a few sessions." – **Robert Hyche**, *Progress Rail*.

"Continue in the direction of ease of use, particularly for the casual user. It's not a friendly world for the casual user at this point. The vendors need to target the casual user [vs. the frequent user] because if it's too difficult to use, the power of the system will be diluted." – **Vicky Palk**, *Tenneco*.



The flexibility enables [us] to react more quickly to changing… demands.

DAVID MEWES, VICE PRESIDENT AND CIO, CHAMPION LABORATORIES

"Scheduled enhancements. There should be a cycle of development where the vendor takes input from the clients over one tu two years and they should roll out major releases every two to three years. I don't have time to upgrade my software every year." – **Patrick Thompson**, *Turner Industries*.

Peer Advice

Besides the traditional big-project advice of "get CEO support" aod "listen to the business user, the managers warn their peers in other companies to prepare for the long haul, make the most of out-of-the-box fuoctionality, and ensure the participation of end users in the project.

"You really need to mioimize customization. Don't try to turn the ERP system into something unique for your company, but change your processes to work around the ERP system." – **Ken DeWitt**, *Sears*.

"Do not underestimate the oeed for change management. It is a full-time job." – **Wayne Sylvanowicz**, *HP Medical*.

"I recommend that businesses streamline their . . . processes and not just automate the way they have always dooe things. . . . Use focused resources. Pull people off their regular jobs, put them on project teams, and give them specialized training — both technical people and business users. If you need to hire contractors, use them to support the legacy system." – **Diana Near**, *The Principal*.

"Start with a solid business plan with concrete benefits. That helps you get and keep management support." – **Don Castle**, *Nabisco*.

"Do not think you can do this alone. Your success depends on getting absolute CEO support. . . . Start data migratioo the day you start your project." – **Michael Cromar**, *GATX*.

"There is no possible way one can overplan a project of this scope. Do not forget the people. Listen to your customers." – **Sam Procket**, *Chevron*.

"Take a hard look at the software today. The functionality has moved light years ahead in the past two to three years. Stick with the vanilla processes as much as possible. The software was designed around best practice thoughts. Utilize that." – **Rodney Rogers**, *Florida Crystals*.

"Top management support and participation were vital to our success. This system spans every departmeot in the company — it is not just an IT thing." – **Wally Hayes**, *Kinetico*.

"Don't let people stonewall you. Don't let them maintain their own islands of automation, because the value of integration that you get across the various business streams far outweighs any slight increase in functionality." – **Frank Holland**, *Microsoft*. ■

ERP SNEAK PEEK

Watch for 1999 to be a year marked by ERP vendors trying to add new decision-support tools and to drive into new vertical markets, particularly those outside the traditional manufacturing sectors. Expect those same vendors to make progress in – but not complete – their integration of back-end ERP systems with front-office sales tools.

Analysts at **AMR Research Inc.**, a consultancy in Boston (*www.amrresearch.com*), offered their views on where ERP technology and some specific vendors are heading this year

"During the past two or three years, many of the vendors have been developing vertical-industry offerings. They have been shifting their products, sales and consulting services to vertical industry orientations. That will continue," says Jim Shepherd, an AMR vice president. Watch for vendors to extend their products in vertical industries in part by adding functions that are specific to that industry, such as special reporting capabilities.

Many of the vendor moves have been into non-manufacturing areas such as retail, utilities, health care and the public sector. "Except for the production aspect and sometimes the sales aspect, these organizations need to do all the things traditional manufacturers will do," says David Caruso, an AMR vice president.

Caruso notes that organizations in those areas need financial applications, purchasing and other ERP-oriented capabilities. The ability to carve out vertical-industry niches will prove important to many of the ERP vendors, particularly second-tier vendors, he says.

Although ERP vendors have been promising to integrate sales force automation software – some of it coming from small vendors acquired by large ERP players in the past year or so – with their core applications, Caruso says most integration now is limited to the SFA package passing a sales order on to the ERP package. He anticipates that true integration is at least two years away

However, Shepherd and Caruso do expect more user demand and more vendor activity in the area of business intelligence or decision-making. Business intelligence tools once were sold to IT people who, in turn, would show business users what types of decision-making applications they could build.

"Now it's being sold to the business users as an application," says Shepherd, who notes that it can be the tool that helps to sell the overall package

Watch for creative pricing strategies centering on the number of seats covered in a license that will disguise the fact that "the overall value to the vendor has gone up dramatically."

Most vendors have announced some form of browser strategy, but **the real user interest will be in using portals as convergence points for all sources of data.**

The recently released Microsoft SQL Server 7.0 database management system could prove a serious competitor to Oracle's Oracle DBMS in the ERP space, particularly with many users interested in Microsoft Windows NT.

– James Connolly

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Down to Size

BY MARY BRANDEL

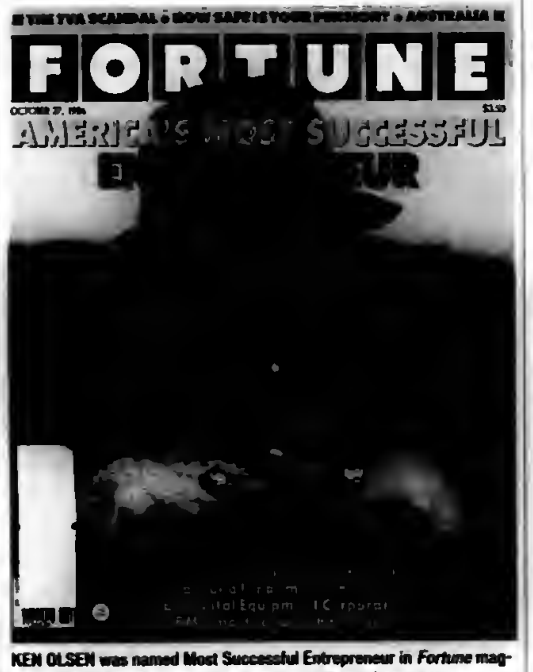
SO MUCH LORE surrounds Digital Equipment Corp. There's the old mill in Maynard, Mass. The tradition of brilliant engineering that led to the first minicomputer (PDP-8), the first 32-bit computer (VAX) and a superfast semiconductor (Alpha). The development of time-sharing and Ethernet-based networking. The downward spiral of the 1990s. The $9.6 billion purchase by Compaq Computer Corp. And of course, founder Kenneth H. Olsen, who left the company in 1992 after 35 years at the helm.

Olsen has since started another computer company, Advanced Modular Solutions Inc. in Boxboro, Mass. *Computerworld* spoke with him recently about Digital's early days.

IT ALL BEGAN in 1957, when Olsen left MIT to form Digital with his brother Stan and fellow MIT engineer Harlan Anderson. Olsen was inspired by the Whirlwind computer, the first digital computer at MIT, and the TX-0, the first transistor-based computer.

Both were very fast for their time and were interactive — that is, people could work directly with them through a keyboard or light pen and could read the results of their queries on a CRT monitor.

Olsen and Anderson approached a venture capital firm, American Research & Development Corp. (ARD), and were granted $70,000 in funding. But the idea of building an actual "computer" wasn't in the original proposal.



KEN OLSEN was named Most Successful Entrepreneur in *Fortune* magazine in 1986 for the success and impact of Digital Computer

Olsen: *ARD gave us some advice. They said, 'Promise fast results — because most of the board is over 80 years old.' And they said, 'Don't use the word "computers" because Fortune magazine said no one is making money in computers.'*

Instead, the business plan proposed two types of printed-circuit modules, digital laboratory modules and digital systems modules to be used by engineers and scientists to test devices they were building or by commercial companies to build systems for their customers.

Olsen: *There were about 30 people making modules and all of them were losing money. We were told we'd be foolish [to enter the business]. But ours were high-speed and thus unique.*

Within a year's time, Digital had made $94,000 and turned a small profit. ARD agreed that Digital could incorporate these modules into its first computer, the PDP-1. It hit the market in 1960 with its own keyboard and CRT. Because it used transistors instead of vacuum tubes, it was faster and smaller than other computers. But even the PDP-1 didn't have the word "computer" in its name.

Olsen: *We called it the Programmed Data Processor so we didn't have to go through government constraints [that listed attributes o machine must have to be sold as o computer].*

People had trouble swallowing the idea of a modestly priced computer. The PDP-1 sold for $125,000 to $150,000.

In 1962, Digital got its big break: International Telephone and Telegraph placed a huge order for 15 PDP-1s. By the end of 1962, Digital reported sales of $6.5 million and net profits of $807,000.

Despite its decline in the '90s and eventual sale to Compaq, Digital's impact can't be forgotten. It is largely responsible for bringing computing power to labs, universities and small businesses that wouldn't have been able to afford IBM's gargantuan mainframes. ▶

Brandel is a frequent contributor to Computerworld. *Her E-mail address is brandel@cwix.com.*

1957

Technology Happenings

IBM introduces the first dot-matrix printer.

Allen Newell, Clifford Shaw and Herbert Simon create **General Problem Solver**, the first program to solve problems that it isn't specifically designed to solve using means-end analysis.

Control Data Corp. is founded.

John McCarthy and Marvin Minsky set up the first artificial intelligence labs at **MIT**.

Noam Chomsky publishes "Synactic Structures," which considers for the first time the computation required for natural-language processing and establishes him as the **"Father of Modern Linguistics."**

A ***Forbes* magazine** article states that there are **1,200 computers** in use in the world. More than **200** of them cost **$1 million** or more; more than **800** cost between **$100,000 and $500,000**.

IBM reaches $1 million in revenue.

IBM introduces the 305 RAMAC (Random-Access Memory Automatic Computer), the first computer disk storage system.

Born in 1957

Paul Gillin, *Computerworld*'s Editor in Chief

Scott Adams, creator of *Dilbert*

Chris Carter, creator of *The X Files*

Other Notables

Best Picture: *The Bridge on the River Kwai*

A head of lettuce costs 15 cents.

One pound of ground beef costs 31 cents.

Gunsmoke is the top-rated show; it's watched by 43% of Americans who own a television set.

Ghana is named an independent state, formed by the former Gold Coast and Togoland.

Hurricane Audrey kills more than 500 people on the Texas and Louisiana coasts.

President Eisenhower signs the Civil Rights Act of 1957, the first civil rights legislation since Reconstruction.

Soviets launch Sputnik II with space dog Laika as a passenger.

JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER

Anticommunist Sen. Joseph McCarthy dies.

Marine Major John Glenn flies from California to New York in 3 hours, 23 minutes and 8 seconds, setting a transcontinental speed record.

The Soviet Union launches Sputnik I, the first orbiting satellite, which begins the space race.

Shippingport Atomic Power Station goes online; it's the first U.S. nuclear generation plant.

■ Flashback is produced with the assistance of the Computer Museum History Center in Mountain View, Calif.

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Computerworld Reporter/Careers & Labor Issues

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IntelligentRisking

BRIAN O'MALLEY
Everest & Africa Adventurer

BARBARA STOKER
Business Consultant & Technical Rock Climber

Set your path. Find your courage. Embrace your adventure. IntelligentRisking allows you to pause and look at the Invisible Risks, the risks you aren't taking in your life. This session is a powerful combination of "The How To" with "The Want To".

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BARBARA MITCHELL, THE MILLENIUM GROUP

Perception is Not Just Everything, it's Everywhere
FRANK CUTITTA, INTERNATIONAL DATA GROUP

Immigration Update
HARRY JOE, ESQ., JENKENS & GILCHRIST

I.T. Retention Metrics Best Practices
DAVID WELDON, COMPUTERWORLD

Cutting Edge Tools for the Internet Recruiter
BRET HOLLANDER, NETRECRUITER

Using a P/L Approach to I.T. Recruiting
DAN HANYZEWSKI, MASTECH

Electronic Recruiting: Trends and Drivers
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Running on NT

Windows NT skills get great career and compensation mileage

By Jill Vitiello

MIGHTY Microsoft NT has captured the market on server operating systems used primarily for office applications. Companies across the wired plains are taking the opportunity of the year 2000 hubhub to upgrade their networks to NT.

As a result, there's a huge demand for experienced NT administrators and a growing supply of newly-minted Microsoft Certified Systems Engineers with little hands-on experience. With so many companies running on NT, there are opportunities for information technology professionals with a flair for networking.

Upping the NT

Salary premiums offered to permanent IT workers with Windows NT skills:

INDUSTRY	[illegible] NT SERVER	[illegible] NT
Business services, consultants	[illegible]	[illegible]
Business services, non-IT	[illegible]	[illegible]
Education	[illegible]	[illegible]
Financial services	17%	[illegible]
Government	[illegible]	[illegible]
Health care	[illegible]	[illegible]
Retail	[illegible]	[illegible]
Wholesale/Distribution	[illegible]	[illegible]

SOURCE: COMPUTERWORLD © 1998 SKILLS SURVEY

Supply and Demand

"It's difficult to find NT administrators with certification and good experience," says J. Matthew Merrick, vice president of information and technology at Merrick Printing Co. in Louisville, Ky., who recently hired several of them.

"The market for NT professionals is absolutely great," says Adam Sandro, senior technical recruiter at Manpower Technical in Cypress, Calif. "The most sought-after is the experienced NT administrator. That position tends to be more lucrative and challenging."

"There are a lot of entry-level folks in NT," says Tiffany Marsalis, a recruiter at Manpower Technical's office in Houston. "People got a whiff of what's hot and what's not and jumped into the hot technology before the new millennium."

Yet many people who achieve certification have no other IT training. They're career changers who come from a range of backgrounds: file clerks, dental hygienists and truck drivers, Sandro says.

"Microsoft [Corp.] realized that it's a fairly important factor to have a ready supply of people to run its systems," says Martin Smith, director of information services at the U.S. International Trade Commission in Washington. Now, there's a steady influx of NT professionals pouring out of community colleges and private training centers. Employers, however, still prefer hands-on experience to certification-only.

"We've hired NT administrators who are experienced in systems engineering and the desktop — certification is not a requirement," says Michael Crowley, vice president and CIO at Rich Products Corp., the world's largest privately owned frozen-food manufacturer, based in Buffalo, N.Y.

For newbies — certified or not — breaking into the ranks of the experienced NT professional requires persistence, the willingness to learn and, in some cases, pure luck.

Making It to the Pros

Donald Shader is a 47-year-old former truck driver who built his own computers as a hobby. He later opened his own telecommunications, satellite and cable television business. When that business closed five years ago, he landed a job as an IT technician at Disneyland in Anaheim, Calif., installing the Innoventions attraction. In September 1998 he was hired as a junior NT administrator at the IBM Integration Center in La Mirada, Calif., and three days later his supervisor quit. "I fell into the role of NT administrator," he says.

In addition to teaching himself the administrator's job, he immediately began formal training and is one class shy of completing the coursework for Microsoft Certified Systems Engineer certification. Shader admits he's motivated by money. "Learning how to work with NT brought me from $12 to $21 an hour in less than two years," he says.

NT Plus . . .

NT administrators with multiple skill sets are the most highly sought after and the best paid, say those in the know. The ideal NT administrator also is skilled in the following:

- **Unix** – "We're recruiting for a Unix administrator; one with NT skills would be a plus," says Martin Smith, information services director at the U.S. International Trade Commission.
- **Operations System Experience** – "We brought in experienced desktop people and helped them get training in NT," says Michael Crowley, CIO at Rich Products.
- **Novell** – "We've seen quite a few conversions going from Novell to NT, so it's good for NT administrators to know Novell," says Manpower Technical recruiter Tiffany Marsalis.
- **PC, Macintosh Experience** – "Because of our company's background in publishing, these would be good skills for NT administrators," says J. Matthew Merrick, vice president of information and technology at Merrick Printing.
- **Interpersonal Skills** – "You have to be able to get along with people who are mad that their computer isn't working," says Donald Shader, a former truck driver in La Mirada, Calif., who is now NT administrator at the IBM Integration Center in La Mirada, Calif.

Big Bucks . . . and More

The IT labor shortage is taking its toll among NT professionals, say recruiters and hiring managers. In California, contractors with NT experience earn approximately $30 to $40 per hour, according to Sandro.

If they combine NT with experience in another system, such as Unix, their hourly rate jumps to $60 to $80.

"I've seen my salary increase with my skills," says Howard Duffy, an NT administrator who's a contract worker at a prominent oil and gas construction company in Houston. "The more server features and functions I can offer, the more money I can demand. Companies are happy to pay my rate because they don't have to hire multiple people to get their processes done."

Companies that prefer to hire employees rather than contract NT talent have a tough time retaining good people. Rich Products lost a couple of NT people about a year and a half ago to local companies, Crowley says. To fend off the raiders, he provides career development incentives and company recognition to his staff.

He also offers training toward the Microsoft engineer certification for his IT people interested in learning NT network administration.

Future Payoff

Though there's no immediate pay raise upon certification, the professional credential pays off in the long-term, Crowley says. So far, his retention program is helping to retain his IT staff of about 120.

Merrick uses a variety of technology opportunities to keep his NT administrators satisfied. "I keep them motivated by giving them new projects and new challenges," he says.

Smith has a technique that's simple but time-tested. "I give them all the money I can and be nice to them," he says. ▶

Vitiello is a freelance writer in East Brunswick, N.J.

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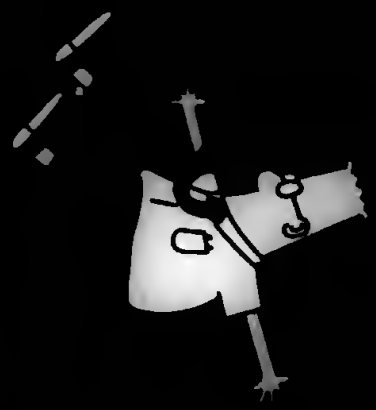

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SOFTWARE ENGINEER to design develop, implement test maintain and support application software systems using Oracle RDBMS, Oracle Financials, Oracle*Forms, Oracle*Reports, SQL and PL/SQL under Windows NT and UNIX operating systems. Requires Master's degree (or equivalent) in Computer Science, Engineering Mathematics or a closely related field, with 2 years of experience in the job offered. A Bachelor's degree with five years of progressively responsible experience in the field will be considered equivalent to a Master's degree. Extensive paid travel on assignments to various client sites within the U.S. is required. Salary $75,000 per year, 8:00 am to 5:00 pm, M-F. Apply by resume to Raghavendra Kulkarni, President, Pro Software Corporation, 6525 The Corners Parkway, Suite 400, Norcross, GA 30092. Attn Job SR

Programmer Analyst Analyze retail banking info systems reqmts design develop enhance & test multimillion dollar computer programs for retail banking clients, by utilizing exp in multimillion dollar retail banking systems design involving iBANK system, relational databases (Informix SQL, Oracle ESQL) programming languages (C, Cobol) communication protocols (TCP/IP) Case Tools & UNIX (Solaris, UnixWare & DRS/NX) 40 hrs/wk, 9-6 $43,472/yr Job in Greenville SC RQMTS BS in Computer Studies or related & 1 yrs exp in job offered or as Computer Specialist or Consultant w/above exp. Send 2 resumes to Ms Regina D Rattenee E&T Technical Services, SCESC 2000892 PO Box 1406, Columbia, SC 29202

Programmer/Analyst Design develop and maintain financial software systems using C/C++, RDBMSs, OO, TCP/IP, GUI, Progress 4GL and other tools, prepare detailed technical specifications, analyze and revise existing systems in networking environment, act as design authority during system development and programming, assist in developing user documentation and training. Req. MS in CS/CIS or equivalent 6 mos. Experience in job offered or in software engineer proficiency in C/C++, RDBMSs, OO, TCP/IP and GUI. 40 hours/week, 8:00am to 5:00pm. Comparable salary. Contact Donna D Pertmutter at 770-690-1528, or send resume to 5425 Powers Ferry Rd, 3rd Fl, Atlanta, GA 30339

Software Engineers needed with exp. in various technologies such as PowerBuilder, Java Script and/or HTML. Apply to Randi Gorga, Bluestone Consultants, 1000 Briggs Rd, Mt. Laurel, NJ 08054.

SOFTWARE ENGINEER to lead team of programmers to develop, test and maintain software design applications by evaluating clients needs, analyze requirements, in UNIX environment (Solaris HP UX) using object oriented methodology and Oracle RDBMS (SQL Plus, SQL Loader, PL/SQL) Informix Progress develop distributed systems, network integration and systems software. Requires M.S. in Computer Science. Coursework must include software engineering, object oriented design, distributed system design, computer networks and database systems. Salary $62,000 per year, 40 hours/week, 8 am to 5 pm M-F. Mail resume to (Job Ref AS99) Manager Human Resources, PowerVision Corporation, 220 Congress Park Drive, Suite 130, Delray Beach, FL 33445-4605

Principal Programmer Sapiens Platform Technical mgmt. for Y2K projects in Durham NC REQ: Bachelor's degree in Computer Science or related field, plus 3 yrs. exp. in job offered, or as Systems Analyst or Programmer in Sapiens technology. Salary commensurate w/exp. Fax resume to Stephanie Price (919)405-1700

Computer Software Application Engineer with 1 yr exp in application creation or in computer science needed for payroll implementation including creation of libraries and database packages. Minimum Bachelor's degree in computer science or related field. Education may be domestic and may be education equivalency. Send resume to Sarta Software 699 Fall River Ave, Seekonk, MA 02771

Programmer Analyst - Detroit, MI - Design, develop & test info mgt sys on UNIX based hardware using Designer 2000, Developer 2000 & ORACLE. M-F, 8AM-5PM, 40 hrs/wk, $70,000/yr. Req. Bach in Comp. Sci., Math or Engineering & 18 mos exp. Send resumes to: 7310 Woodward Ave., 4th Fl, Detroit, MI 48202, Refs 108698. Employer Paid ad.

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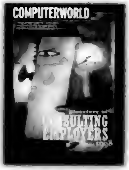

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Programmer Analyst (2 positions) for performance analysis & improvement of ACES (Ameritech Customer Experience Solution) Cellular Billing Point of Sale System create baselines from existing models for different server machines running major business application predict results to check if servers resource usage is within safe limits using MS-Excel, automate existing manual process for creating baselines using VB4 design, develop implement & write new Shell scripts, modify perl program code analyze SQL Scripts inside Stored Procedures, modify and test for performance program with MS-Visual Basic, MS-Access, MS-SQL Server, Sybase & Oracle and make suggestions to developers for changes to stored procedures based on documented test results. Reqs Bach in Comp. Sci or Computer Electrical or Electronics Engg. or Comp. Info Systems or Comp. Applications or Math or any Engg field or its foreign educ equiv $57,450/yr. 40 hrs/wk, OT as req'd 8a-5p Must have proof of legal authority to work permanent in U.S. Send 2 resumes & cover letter (no calls) to Illinois Dept. of Employ Security, 401 S State St 7 North Chicago, IL 60605, Attn Leonard Boksa, Ref. #V-IL20360-B "Employer Paid Ad"

Programmer to design, develop & maintain software which facilitates trade-off studies of engineering design decision using C programming in UNIX environment, provide development support in creating graphical front-ends for in-house optimization codes such as OPTCOM & OPTCAST to facilitate data acquisition validation and presentation during pre/post processing stage implement modular approach for software integration combining design sensitivity analysis with structural/thermal optimization codes, employing Tool Command Language (Tcl) & ToolKit (Tk) GUI building libraries, provide technical support to CAE analysts & coordinate future development efforts between research & vehicle development programs, administer & design internal web-site used for software deployment, documentation & promotion purposes. Require Bach or foreign equivalent in Engineering or a related field and 2 yrs. exp in job offered or a related occupation which includes GUI design and development for UNIX platforms using Tcl/Tk. 40 hr wk 8am-5pm $62,000/yr. Send resume to 7310 Woodward 4th Flr Detroit, MI 48202. Ref #93099 Employer Paid Ad.

PROGRAMMER/ANALYST (Farmington Hills, MI) Structured systems analysis, design, development; unit & system testing/integration of complex appls (386/486 based machines DEC Alpha & PC/AT), operating systems (Windows NT4.0, Windows 95 OSF/1 MSDO PROGRESS 4GL & ERP package mfg/PRO) develop business-related appls./performance tuning/integration for business/manufacturing appl in multi-hardware/software environ w/centralized/distributed appl. in a database mgmt. system (RDBMS) 4gl & GUI front end tools: analyze, design, develop & test client server appl w/ object oriented method. BS Engineering/Computer Science or equiv + 2 yrs exp as Programmer/Systems Analyst or Software Eng. Must be proficient in PROGRESS (7.3c, 6.3A), C++, QADs MGF/PRO 8.6d, 8/5I, 7.4G, (73E $67,500/yr 40 hrs/wk, OT as needed. Send resume to: Sandy Mass, United Systems, Inc 5875 Peachtree Industrial Blvd., #200, Norcross, GA 30092

DATA WAREHOUSE/GENERAL LEDGER ANALYST. Analyze, design and implement data warehouse and database systems based on requirements gathered. Provides programming and performance tuning support for production database and data warehouse system. Will analyze the existing General Ledger system maintained by ConAgra as well as its financial reporting process. Work with functional team to learn financial and reporting needs and subsequently develop various reports (using data warehousing tools) to analyze General Ledger and other associated information (e.g., corporate assets liabilities and capital). Plans, develops, tests and documents computer programs, applying knowledge and skills of Web programming techniques, computer systems and database management systems. Analyzes user requirements, procedures, and problems to automate and improve business processing. Conducts studies pertaining to development of new information systems to meet current and projected needs. Converts project specifications, using flowcharts, diagrams, and other data modeling tools into sequence of detailed instructions and logical steps for both database and web programming. Upgrades system and corrects errors to maintain system after implementation. May oversee installation of hardware and software. May assist and coordinate work of others to develop test install and modify programs. Assists users to solve operating problems. May train users to use systems. The position requires a working knowledge of available data warehouse products and their implementation methodology requires advanced knowledge of accounting and financial systems skills with relational database management systems (Oracle and DB2 are preferred) experience with web development tools, Lotus Notes development, COBOL programming language, Visual Basic, C, C++ and other GUI programming languages. Also requires knowledge of project management, software development methodologies and LAN/WAN technologies. Master's Degree in MIS or Computer Science required. 40 hours/week. $40,000/year. Must have legal authority to work in the United States. Send your resume to, Bernard Childerston Nebraska Department of Labor PO Box 94600 Lincoln Nebraska 68509. Refer to Job Order NE 0233805. This advertisement is paid for by the employer

Systems Analyst Consultant/SAP to develop production planning & control systems for chemical industry customize s/ware SAP to meet requirements of end users, manage SAP R/3 implementation achieving production targets, ability to develop functional specifications & design requirements for SAP R/3 implementations; design & implement systems to improve efficiency & troubleshooting write codes in ABAP/4, design prototypes on logistic modules & financial module of SAP R/3, Reqs. Bach. in Comp. Mech. or Chem Engr Comp Info. Systems or its foreign educ equiv 2 yrs exp in job offered or 2 yrs related exp such as S/ware Engr or Production Mgr or Production Exec. Related exp must include designing & implementing systems to improve efficiency of section, troubleshooting, production planning & achieving production targets, $72K. 40 hrs/wk. OT as reqd 8a-5p Must have proof of legal authority to work permanently in U.S. Send 2 resumes & cover letters (no calls) to Illinois Dept of Employment Security 401 S. State St - 7 North Chicago IL 60605. Attn Arlene Thrower Ref #V-IL20688-T

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Application Specialists

Central Newspapers Technology Corp. is seeking team oriented Application Specialists supporting the Editorial and Advertising departments at Indianapolis Star and News. Experience with UNIX, SQL, Windows NT, Windows 95, or Macintosh operating systems required. The positions require strong analytical and communication skills combined with systems development methodology and project management fundamentals. Must be able to work in a cross-functional role with the client community and other Information Technology staff in all stages of a project life cycle. Some shift work may be required. A Bachelor's degree and four or more years experience in application support is preferred.

Information Systems Manager to function as employer's sole information officer to design, develop, test, implement and coordinate/train users on computer applications and all technology of the employer assess, analyze and recommend new software troubleshoot computers coordinate Y2K compliance including the creation of a plan for technology disaster recovery and act as employer's liaison with outside providers, using CNE Certification, MCP Certification, HTML and SQL. Requires Masters or equivalent level degree in MIS or a closely related field and two years experience in information systems management (including at least six months directing Y2K system compliance). Qualified applicants must presently be eligible for permanent employment in the United States. Successful applicant must be able to perform job duties on date of application. Salary $40,000 to $50,000 per year, depending on qualifications, plus employee benefit plan. 40 hours per week (8:30 a.m. to 5:00 p.m.); overtime as needed without additional compensation. Send resumes to Ms. Lois Pfeffer, Administrator, Rabbitt, Pitzer & Snodgrass, P.C., 800 Market Street, Suite 2300, St. Louis, Missouri 63101-2608. An Equal Opportunity Employer

Programmer Analyst Analyze, design, develop and implement programs, application modules and interfaces for application and database systems, utilizing SAP ABAP/4 and COBOL. Requires a Bachelor's degree in Computer Science, Engineering or Math and 1 yr experience. 40 hrs/wk, 9:00 a.m. to 5:00 p.m., $58,100/yr. 1 position available. To apply: Mail resume w/copy of ad attached to: AR Employment Security Department, Rogers, AR 1676 S. 8th Street, or send two resumes to David Hayes, PO Box 2981 Little Rock, Arkansas 72203. J.O.# 959960

Line of Business Manager-Application Development to manage multiple application development projects including assessment of customer requirements, participation in determination of billing rates and preparation of proposals, assignment of staff and ensure customer satisfaction and timely completion of projects; design and implement software applications multi-media applications with graphics, and internet applications utilizing sockets; evaluate network architecture and resolve configuration and security issues involving multiple platforms including Windows, UNIX and Novell; object oriented analysis, distributed computing and remote procedure calls and C++; and provide training and consultation to staff. Requires Masters level degree in Computer Science, Engineering, Mathematics, Information Systems or related field. Successful candidates must be able to perform job duties on date of application and must be presently eligible for permanent employment in the United States. Salary $60,000 to $90,000 per year depending upon qualifications (40 hour week plus overtime as needed without additional compensation) plus benefit plan and bonus eligibility based upon performance. Send resume to Ms. Rachelle Walker, Staffing Specialist, Solutech, Inc. 117 South Main Street, St. Charles, Missouri 63301.

Programmer Analyst Oakbrook, IL. Plan/dvlp/test business application prgms. Evaluate user requests. Anlyz & dvlp specifications & prgms. Review & alter prgms. Monitor performance. Perform conversion. Rqd BS in Electronic Engr or Comp Sci. 1 yr exp. Exp must incl VS Cobol II, DB2, Data Com, EASYTREIVE & IDMS on IBM 3090 ES Mainframe. 40 hrs/wk, 9-5, $53,000/yr. Must have proof of legal authority to work permanently in the U.S. Send res. to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY 401 South State Street - 7 North Chicago, Illinois 60605. Attn Leonard Boksa. Ref # V-IL 20535-B. AN EMPLOYER PAID AD. NO CALLS. SEND 2 COPIES OF BOTH RESUME & COVER LETTER.

HARDWARE RELATIONS LIAISON & SOFTWARE QUALITY ASSURANCE ENGINEER. Liaison with hardware manufacturers to ensure that the company is part of their development program. Track and maintain records of developments in hardware and software for supported platforms. Test Mathematica including writing software test suites. Maintain the company's WEB pages and browse Internet to respond to inquiries. Consult with customers and high end users on Mathematica on many diverse computer systems (ex. Macintosh, PC, and Unix). Develop technical notes and communicate effectively in writing and orally with developmental staff to report and correct both minor and advanced applied mathematical and technical problems reported by users. Present site demonstrations on Mathematica and its uses. Coordinate implementation of and create on-line documentation for Math Reader 3.0 for computer systems including: PC's, Mac, Unix. Computer programming in Mathematica, C and other languages as required. Coordinate schedule and track products that involve customization of the Mathematica Front End or Kernel including the customizable kernel itself. Calculus Live and Calculus Wiz, and MathReader. Coordinate the work and consultants and external clients. Maintain and update schedules for Calculus Live and Calculus Wiz of internal developers, coordinate proofreading and copyediting of Calculus Wiz along with other software changes, review comments from alpha and beta testers, determine and coordinate repairs, review printed manual for Calculus Wiz. Position requires a Bachelor's of Science Degree with major field of study in math, or a math based science, or physics plus 2 years experience in job offered, or 2 years experience as a Computer Software Technical Writer in Mathematica and related applications. Work hours are 8:00 a.m. to 5:00 p.m. 40 hours per week. Pay is $32,235 per year. Job site and interview: Champaign, Illinois. Must have proof of legal authority to work permanently in the United States. Please send this ad and your resumes to ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street-7 North, Chicago, Illinois 60605. Attention: Leila Jackson, Reference # V-IL 17398-J. AN EMPLOYER PAID AD. NO CALLS. SEND TWO COPIES OF BOTH RESUME AND COVER LETTER.

Programmer/Analyst
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Email: terry.brooks@anlw.anl.gov

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Cites companies earning 50% of revenue from Net

TRADING BEGAN Friday on the Chicago Board Options Exchange for an option based on the new Dow Jones Internet Commerce Index. The 15 companies traded in the index (see chart) get at least half their revenue from providing goods or services via the Internet. Dow Jones & Co. in New York also created the Internet Services Index of 25 stocks from companies that derive half their revenue from providing Internet access and services. The Commerce and Services indexes together are called the Dow Jones Internet Index, created by Chad Rakvin at Dow Jones. Rakvin talked to *Computerworld* staff writer Matt Hamblen about the new indexes.

Q: Why wouldn't a company like Cisco Systems [Inc.] make either index?

A: Our No. 1 stipulation is that a company must generate 50% of its revenues from the Internet and Cisco doesn't, so far. But they want to be an Internet company, and changes will be made to the indexed stocks each quarter.

Q: Why create these indexes now?

A: The Internet is a hot sector; there seems to be a need and people are interested. At one point, people thought the Internet sector was just a craze, another tulip bulb. But there's been greater and greater demand and ... more companies are shifting focus to the Internet to drive revenue, from retailers selling books to traders selling stocks.

Q: What makes your Net index different from others?

A: We wanted to create an index based on a strong methodology.... We came up with some and they're right there for people to see. [Editor's note: the methodology is at *www.dowjones.com*.] In addition to the revenue requirement, a company must have a three-month trading history and an average $100 million capitalization over one quarter. ■

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KEY: **(H)** - New annual high reached in period
(L) - New annual low reached in period

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Greeting Card Rivals

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Privately held Hallmark was able to produce the Warm Wishes line in a "fraction" of the usual 20-month card design and development process, thanks to technology, Miller said. Warm Wishes cards are now in about 20 Wal-Mart stores but will be released starting today to thousands of other stores. They're the first Hallmark card line digitally redesigned from old designs stored in a 7T-byte database.

In a new process involving database tools built by Hallmark's IT staff, small teams of product planners, editors and artists can call up old designs on desktop computers and quickly send them to a printer, Miller said. Kansas City, Mo.-based Hallmark employs about 700 artists, most using desktop computers for designs.

Each year, the $4 billion company, which has 40% of the domestic card market, produces 11,000 new card designs and 8,000 reused card designs. The Warm Wishes campaign begins a process to use computers to retrieve digital images quickly from a database.

Meanwhile, American Greetings, with annual revenue of $2.2 billion and 33% of the card market, said recent technology investments — designed to get new cards to store shelves more quickly — are expected to cut into its revenue and earnings by $100 million during the next year. Today, retailers must keep American Greetings inventory as they order new products on a set schedule. But in the future, retail buyers will be able to replace cards more often because of the system American Greetings has installed to reduce the time between designing new products and shipping them to retail stores. Although Cleveland-based American Greetings declined to discuss system details, CEO Morry Weiss said in a statement that technology advances would allow the company to offer more innovative cards, ship designs faster to retailers, cut inventories — and boost sales again in 2001.

Technology investment at both companies is "part of becoming more effective and bringing costs down," said Sheldon Grodsky, an analyst at Grodsky Associates Inc. in South Orange, N.J. "And it's not an easy thing to do, since the most important thing is to put something on the counter that most women want to buy," Grodsky said. Women are the majority of buyers — more than 80%.

Hallmark (*www.hallmark.com*) and American Greetings (*www.americangreetings.com*) both have Web sites touting personalized greeting cards and holiday reminders. But it's the retail market that still dominates the business.

Both companies are working to hold down prices, said Sally Schaadt, equity analyst at The Fourteen Research Corp. in New York. Some retailers such as Wal-Mart won't allow manufacturers to raise prices, and having cards that cost 99 cents as well as $4 high-end cards is a good way to attract more buyers, she said.

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Leap Year

The culprits are sloppy programming and short-sightedness, he said. "The same damn things keep happening over and over and over again, because people don't learn from history."

Especially worrisome is that, in a *Computerworld* survey of 105 information technology managers, 17% didn't know 2000 is a leap year. "2000 is gonna be a stinker because there are a lot of people that don't understand whether it's a leap year or not," Neumann said.

OWENS CORNING'S Michael Radcliff: "It shouldn't be a problem"

The confusion arises because the rules for determining leap years are more complicated than the "every four years" rule taught in grade school. There are two other factors: Years divisible by 100 aren't leap years, except that years divisible by 400 are. So 1900 wasn't a leap year, 2000 will be and 2100 won't be.

The survey found that many large U.S. corporations appear to be addressing the leap year issue at the same time they fix the "00" year rollover problem. Seven in 10 respondents said they expect to have their systems ready for the leap year by June, and the rest expect to finish by year's end.

Many IT executives said they would be surprised if other companies haven't factored the leap year into their year 2000 planning. "It would be silly for companies to miss this. [Leap year] has been talked about for so long it shouldn't be a problem," said Michael Radcliff, vice president of information systems at Owens Corning, a Toledo, Ohio-based building materials supplier.

But history isn't on the optimists' side. Virtually every leap year in the computer age has had glitches, including the following episodes in 1996:

- About 60,000 people were unable to buy Fantasy 5 lottery tickets in Arizona on Feb. 29 because the lottery-machine software didn't recognize the leap day.
- Lab equipment software used by heart surgeons at Papworth Hospital in the U.K. couldn't function Feb. 29, so the lab analysis had to be done by other labs using a different vendor's equipment.
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In fact, 7% of the IT managers surveyed by *Computerworld* said their company had experienced leap-year systems problems. And 22% of the respondents said they are concerned about the leap-year compliance of their trading partners' systems next year.

"The sophisticated [organizations] know it's a leap year," said Capers Jones, chief scientist at Artemis Management Systems Inc. in Burlington, Mass. But for those that haven't factored it in, Jones estimated that 10% to 12% of the applications that handle the century change "will miss the leap year part of it."

Companies looking solely for "00" date rollover problems will miss leap year and daylight-saving time problems, Neumann said, because they show up in different parts of the code.

Vigilance is the key. MBIA Inc., an Armonk, N.Y.-based insurer of government bonds, already has identified a third-party portfolio management application that hadn't included the extra day in its original year 2000 remediation.

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MOREONLINE

The complexity of leap years can be blamed on Pope Gregory XIII. Why? Visit our Web site for an explanation.
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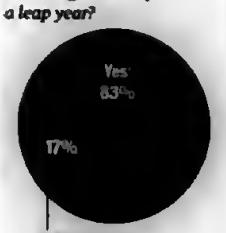
Pop Quiz

To the best of your knowledge, is next year a leap year?



Do you know the three rules for determining a leap year?

Base: 105 IT managers at U.S. businesses with 100 or more employees

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First Lines • *www.people.cornell.edu/pages/jad22* • The first lines of 297 famous books — but not "It was a dark and stormy night."

Masquerade • *www.masquerade.com* • A chat room where you attend a party as your favorite historical character. Recently, Abe Lincoln accused Nostradamus of being a pessimist, while Genghis Khan made a pass at Joan of Arc.

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UnGroom'd • *www.ungroomd.com* • Brides get magazines that are two inches thick. What do grooms get? This site, with a man's perspective on engagement, marriage and what follows.

INSIDE LINES

NOT THE TROUBLE THEY EXPECTED
Year 2000 testing may open a **bigger can of worms** than you thought. In Decatur, Ga., three fire department supervisors lost their jobs when technicians testing their computers for Y2K compliance found sexually explicit material apparently downloaded from the Internet. The city's sexual-harassment policy prohibits such material in the workplace.

GOOD ANSWER
After delivering a keynote talk at a technology conference last week, **former President George Bush** was asked for his views on taxing online commerce.

His response – "You know something, **I don't know one damn thing** about that" – resulted in audience laughter and applause. And if he tried to answer the question about E-commerce, Bush quipped, the audience would know that.

Bush, who admits to having WebTV in his bedroom, described himself as "semi-illiterate" about the Internet.

COACH STEVE
Microsoft president **Steve Ballmer** – who always looked a lot like a high school football coach to us anyhow – appears to be raising spirits in Redmond.

Latest case in point: Each software developer is now reportedly responsible for the specific components he or she works on.

Once the software ships, customer complaints mean **fewer bonuses** or lower pay. You'd think that would be a morale-buster, but developers seem to like the fact that, for a change, somebody's in charge.

OVERHEARD
FCC chairman **William Kennard**, after the FCC announced it has jurisdiction over Internet phone calls: "We are not regulating the Internet and we will not do so as long as I am chairman." . . . Intel executive **Pat Gelsinger** at last week's Intel Developers Forum, begging PC makers for more stylish PCs: "Interesting, innovative design isn't occurring only on the iMac." . . . **Cary Parker**, spokesman for electronic tax filing firm Nelco, on the surge in personal tax E-filings and questions on weekday mornings: "I guess they want to used more advanced computer equipment and the company's dime to make the phone call."

RUMOR MILL
Adobe Systems should launch InDesign this week, its latest effort to topple publishing software king-of-the-hill **Quark.** Adobe knows it faces an uphill climb – the new product was code named K2, after a very big mountain. . . . **Computer Associates** and **Vetronix** are working on products due in July that will diagnose an automobile's problems via wireless links. . . . Start-up **Vivant** in Oakland, Calif., is readying a Web-based tool to let IT shops manage contract labor. It's due this summer.

OOPS!
A police computer in **Fort Worth, Texas,** switched itself on in the middle of the night on Sunday, Feb. 21, and made phone calls that **awakened more than 400 residents,** according to the Reuters news service. The system was supposed to call during the day and invite residents to a police community forum. Well, at least they'll have something to talk about.

You can call news editor **Patricia Keefe** anytime with news tips and tidbits at (508) 820-8183, or you can E-mail her at **patricia_keefe@computerworld.com**

The Next Big Thing For Trade Shows

AVATARS LIKE Max Headroom may be greeting you at tradeshows soon. The advantage of "electronic booth staffing" is that these virtual humans never tire and can dish out accurate information at all times. Research Triangle Institute in Research Triangle Park, N.C., developed an interactive kiosk that combines natural language processing and adaptive behavior models so the avatar can carry on conversations and explain new p-p-p-products to showgoers. "They will be just as knowledgeable, friendly and humorous at the end of the day as they are at the beginning," says Carol Gunther-Mohr, manager of the institute's Exhibitar program.

◄ **AVATARS NEVER get sore feet and can give the usual trade-show booth some personality and pizzazz**

The 5th Wave

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